THE IRON AGE

New York, Thursday, July 12, 1906.

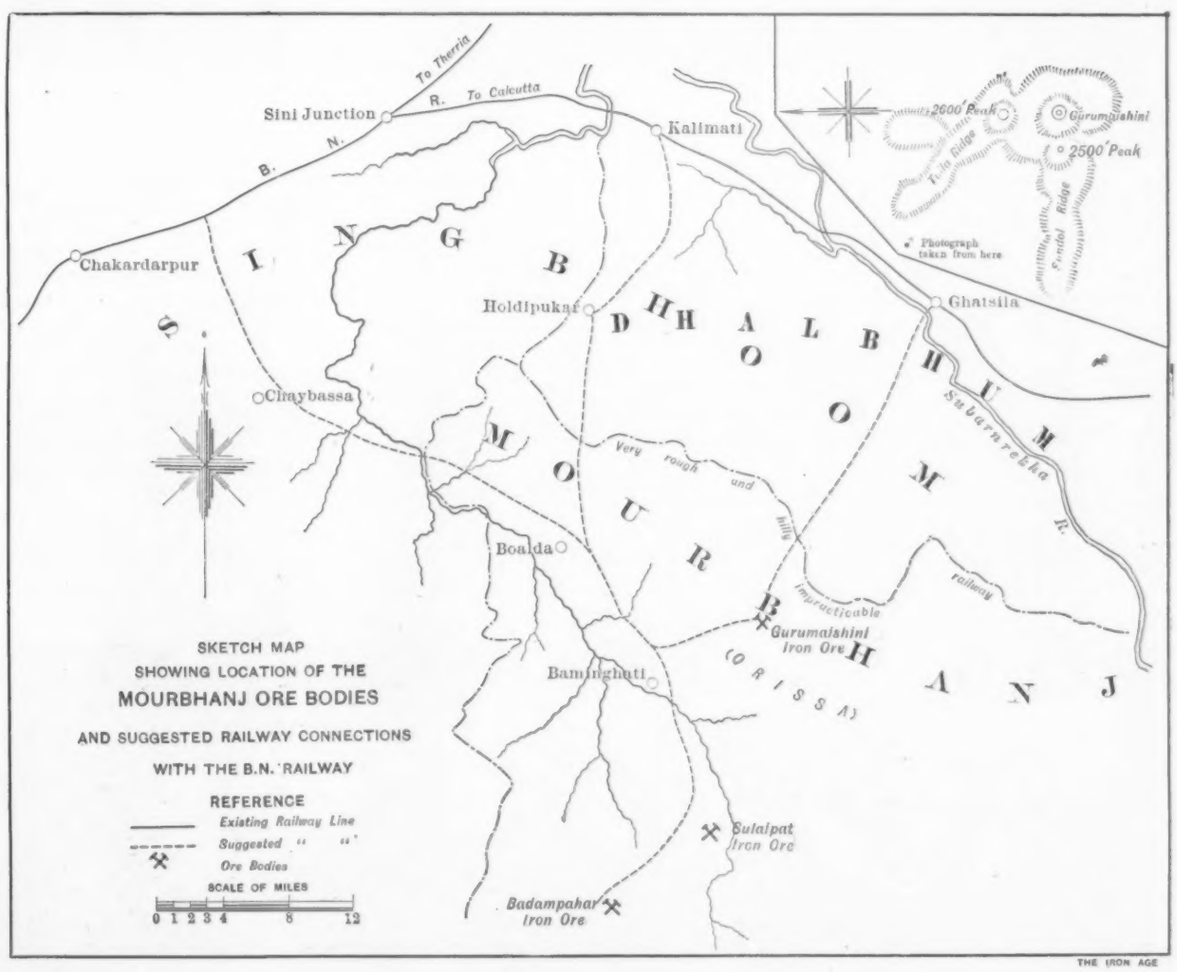
Iron and Steel Manufacture in India.

The Tata Iron & Steel Company.

Some years since, at the suggestion of a former Secretary of State of India, the late J. N. Tata, a prominent cotton spinner and merchant of Bombay, became interested in the question of establishing on a large scale the manufacture of iron and steel in India. Mr. Tata's studies of the subject led him to visit Europe and later this country, where he met with the skillful and energetic co-operation of A. P. Cochrane, the representative in this country of Tata & Co. In the course of his investigations Mr. Tata conferred with Julian Kennedy of Pittsburgh, at whose suggestion the project was submitted to Charles P. Perin of New York. The preliminary investigation of the underlying mineral resources was placed by him in the hands of C. M. Weld, who spent two years in a study of the problems involved. Mr. Perin and Mr. Weld then went over the ground thoroughly together, and subsequently Charles J. Stoddart, chairman of the Park Gate Iron & Steel Company, Limited, headed a party of English engineers and experts who fully confirmed the results arrived at.

The reports of Messrs. Perin and Weld shed a flood of light upon the conditions surrounding iron and steel manufacture in India. They are models of profound and comprehensive work, and lead to the conclusion that conditions in India are such that a native iron and steel industry will be capable not alone of taking care of the home requirements of that country, but also in time of conquering a position as a competitor in a wide field.

Mr. Weld began his work in the district of Chanda, in the Central Provinces, where the existence of great iron ore deposits was reported, only to find them inadequate. He sampled the local coals of the Warora basin, but found them to be hopelessly noncoking. In 1903 Mr. Weld, as the result of a journey from Rajnandgaon, on the Bengal-Nagpur Railway southward, became impressed with the iron ore resources of the Raipur district, and soon afterward began active explorations in the jungle of the Dhullee and Rajara Hills, 38 miles due south of the Rajnandgaon.



Subsequently an investigation was made of the iron ore deposits of Gurumaishini Hill, in the northern part of the native State of Majurbhanj, Orissa, and this examination showed results so highly encouraging as to quantity and quality of ore and as to accessibility that the problem of a supply of ore was considered solved.

The search for a coking coal of adequate quality finally led to the Jherria coal field, while the determination of the most favorable site for the works, with due allowance for assembling the raw materials, the marketing of product and for an adequate water supply, pointed to Sini Junction on the Bengal-Nagpur Railway, in the Sinbhum district.

The Market.

Messrs. Perin and Weld have made an interesting study of the consumption of iron and steel in India, based upon the Government returns of imports and the known product of the Barakar works. The total average annual imports, including railroad materials, for the ten years 1893-1902 were over 450,000 tons, while those of 1903 and 1904 were 554,806 and 676,305 tons, respectively.

The imports of iron and steel for the period of 1893 to 1904, both inclusive, are summarized in the following table, in which the imports of Bengal have been segregated from those of India as a whole. The values are based upon a special study made by Tata & Co.

	Bengal.		All India.	
	Tons.	Value.	Tons.	Value.
Pig iron	16,000	$18.15	22,000	$18.32
Castings	7,000	29.32	14,000	29.32
Totals	23,000	....	36,000	....
Steel.				
Rails	58,600	$26.31	129,500	$27.93
Sleepers	2,000	32.48	10,000	32.48
Beams, &c.	12,700	34.75	19,200	35.40
Totals	73,330	....	158,700	....
Bars, &c.	37,000	$38.33	111,000	$38.33
Sheets and plates	18,000	45.47	35,800	43.52
Totals	129,800	....	319,500	....

The present home production is about 50,000 tons of pig iron and castings.

The figures given above of course represent the average over a series of years during which time the consumption of India, like that of all other countries, has recorded a considerable increase, so that they represent really a good deal less than the minimum of future requirements.

Messrs. Perin and Weld refer incidentally to the fact also that at the cost at which iron and steel can be made in India under the conditions now established a very considerable share of the tonnage of the Orient may be captured.

The only sustained attempt at the manufacture of iron and steel in India, on the lines of European practice, has been that of the Bengal Iron & Steel Company at Kendwa in the Raneegunge coal fields, near Barakar, 141 miles north of Calcutta. A small blast furnace was built in 1874, and after varied fortunes the plant was acquired by the Bengal Company, which gradually built three stacks and is completing a fourth. The enterprise depends primarily upon local hematites and limonites distributed through a mass of carbonaceous shales, and upon hematites occurring in pockets in magnesian schists, 130 miles distant, at Turamdih, 5 miles south of the Kilimati station on the Bengal-Nagpur Railroad. At first good coking coal was drawn from the company's collieries in the immediate vicinity of the furnaces in the Raneegunge field, but now the bulk is drawn from the Jherria field. From 1899 to 1904, both inclusive, the plant produced 223,600 tons of pig iron. Hand labor serves throughout, to the unloading of raw material from cars, loading and charging, breaking the pig iron and carrying it to the stock pile hundreds of feet away. It has therefore been found possible in the tropical climate of India to apply hand labor to every department. While the daily wage appears ridiculously low, the average pay of an ordinary coolie not being over 8 cents per day, yet the cost of labor front and back, including two European foremen for each furnace, is figured at $1.10 per ton.

The Bengal Iron & Steel Company has two pipe and two jobbing foundries, making between 15,000 and 20,000 tons per annum, and a steel plant, completed toward the close of 1904, with two basic open hearth furnaces, a blooming mill, a 28-inch mill for heavy sections, driven by the same engine, and a 20-inch three-high bar mill for flats, angles and light beams.

Fig. 2.—View of Gurumaishini Hill.

Fig. 3.—Outcrop of Iron Ore in Dhullee District.

The Iron Ore.

So far as the early future is concerned, the Sini Works will draw chiefly upon the ore deposits in Majurbhanj State, and upon the large body opened up on Gurumaishini Hill in particular. The location of the latter with reference to the site of the plant is indicated in the accompanying sketch map. The topography of the country is shown by the reproduction of a photo-

graph, taken as indicated by the arrow in the plan in the upper right hand corner of the map. The hill lies about 24 miles south-southwest from Ghatsila on the Bengal-Nagpur Railway, but the connection with that line will have to be sought through the Kodkai Valley in the direction of Chaybassa. The principal masses of ore occur in the Tuila and Sundal ridges, while a second series of striking outcrops and scarps occupies the higher levels along the peaks. Messrs. Perin and Weld estimate the ridge ores to offer a tonnage in sight of 3,600,000 tons, crediting the ore in place with a depth of only 10 feet. On the slopes of the ridges and on the flat ground between, heavy and widespread accumulations of float ore offer 2,700,000 tons in sight when taken at only 1 foot in depth. An estimated tonnage in sight on the peaks of 1,200,000 tons brings the total estimate of Gurumaishini up to 7,500,000 tons. Other ore deposits have been located at Sulaipat and Badampahar. The average of 11 samples taken by Perin and Weld shows 61.85 per cent. of iron, 0.036 of sulphur and 0.135 of phosphorus. Stoddard and Selkirk report as the average of 35 samples 63.28 per cent. of iron, 0.064 of phosphorus and a trace of sulphur.

These ore deposits are now held under a three years' prospecting lease, which carries with it the right on its expiration to a mining lease of over 20 square miles of territory. The royalties are to be paid on the basis of a sliding scale.

The Government of India has authorized the construction of a broad gauge line by the Bengal-Nagpur Railway to the Gurumaishini ore deposits, a distance of about 60 miles, and then the cost delivered at Sini would foot up to about 75 cents per ton.

The second great deposit thoroughly prospected by Perin and Weld is that of Dhullee-Rajara, which, however, is likely to be kept in reserve, so far as the near future is concerned. The ore occurs in lenses or pockets, of which three were explored on the Dhullee-Rajara ridge, a view of the outcrop of one of them being shown in the accompanying engraving. Mr. Weld thoroughly tested the deposit with four Bravo hand diamond drills of the Sullivan Machinery Company, the drills furnishing a ⅞-inch core. These were operated with native labor, which was paid at the rate of about 5 cents per day, or rather above the prevailing market rate. Water for the drills was carried in 5-gallon kerosene cans, the women coolies making four to five trips a day carrying one can on their heads. Six drill holes in conjunction with the outcrop tests proved up ore, above a contour 325 feet above the surrounding level, to the extent of 2,500,000 tons, carrying an average of 67.45 per cent. of iron, 0.061 phosphorus, 0.09 sulphur, 1.08 silica and 0.16 manganese. This 2,500,000 tons, however, represents only a small proportion of the ore existing in the concession.

Fig. 4.—Prospecting with Bravo Diamond Drill in India.

The Coal.

The Jherria coal field was selected after a thorough study of the coals of the Central Province as furnishing a suitable coking coal. The field lies in the northeastern part of the district of Manbhum, Bengal, and was opened by the extension to it in 1894 of the East Indian Railway, followed in 1901 by the Bengal-Nagpur line. The field lies immediately to the west of the Raniganj field, being roughly the shape of a segment of a circle, the chord trending west-northwest for 23 miles. The width is about 9½ miles and the total area is about 150 square miles. The valuable coals are included in the Barakar group of 18 seams, named in ascending order, of which Nos. 1 to 10, inclusive, are inferior. Nos. 11 to 18 yield a fairly acceptable average quality of coal and all have distinct coking qualities. Some are available without washing, others require washing. Tests were made both at Kalk and at Dortmund, Germany, which proved that any attempt to reduce the ash in the dirtier coals down to within reasonable limits would be accompanied by a very great wastage of the raw coal and that, therefore, operations must be confined to the cleaner seams. It has been shown, however, that the smaller sizes and dust run lower in ash than the coarser coal. The Tata Iron & Steel Company will acquire from the Indian Collieries Syndicate, Limited, the portion of the Jherria coal field held by that syndicate, comprising an area of about 3 square miles. It is estimated by Dr. Walter Saise that the quantity of workable coal at depths varying from 300 to 1000 feet may be taken at 63,500,000 tons of coal and under that depth at 11,600,000 tons of coal.

Coking tests of Jherria coals were carried out in Otto-Hilgenstock and Brunck by-product ovens in Germany and in Semet-Solvay ovens at Syracuse, the results of which were that the coke is hard and sound, but almost forbiddingly high in ash except where washed coals were used. Since washing is impracticable it is suggested that operations be confined to the cleaner seams in the southeastern part of the field, supplemented by the slack from certain other seams to supply the ovens with coal averaging 10 to 11 per cent. in ash. Coal thus obtained, in by-product ovens with fine disintegration and stamping, should yield 70 per cent. of large coke with excellent physical structure, not over 15 per cent. in ash and noticeably low in sulphur.

The practical coking tests showed that there may be

recovered from the coal as by-products 3 per cent. of tar, 1.1 per cent. of sulphate of ammonia, 9000 cubic feet of gas with 550 British thermal units per cubic foot and 9 pounds of benzole.

The annual coal requirements of the coke ovens, producers, boilers, &c., will be something over 250,000 tons, of which the greater portion may be a slack or dust coal. This coal at the collieries will cost 65 cents per ton. An estimate of the cost of the coke at Sini is $2.06 per ton, and deducting returns from the by-products, $1.14 per ton at the furnaces.

A number of sources of supply of limestone are available; dolomite can be obtained from Jubbulpore, magnesite from the Madras presidency, fire clays from the Raneegunge coal fields and Jubburpore, and manganese from the Central Provinces and Madras.

The Site.

After a study of the conditions Sini Junction on the Bengal-Nagpur Railway, 171 miles from Calcutta, was selected. Aside from its location with reference to ore and fuel, a vital consideration was that of water supply.

rail and beam mill, including three stands of rolls, operated by a reversing engine, and three merchant bar mills, one 22-inch, one 14-inch and one 8-inch, each operated independently; 4000 horse-power boilers, machine shops, iron foundry, &c., the total cost of which is placed at $3,383,000, exclusive of freight and foundations. The total capital needed is placed at $6,500,000, including collieries, coke ovens, by-product recovery plant, land, bungalows and reservoirs, and $975,000 for working capital and $287,000 for contingencies.

The Cost of Manufacture.

Messrs, Perin and Weld present the following estimate of producing iron and steel:

The cost of the raw materials for pig delivered at the furnace has been estimated to be: For iron ore with 60 per cent. metallic iron and 0.08 phosphorus, 73 cents per ton; for coke with 15 per cent. ash, 0.60 sulphur and 0.15 phosphorus, $1.14 per ton, and for flux from Katni, with about 3 per cent. insoluble matter, $2.15 per ton. The quantities required per ton of pig may be taken to be 1.07 tons, 1.25 tons and 0.50 tons, respectively.

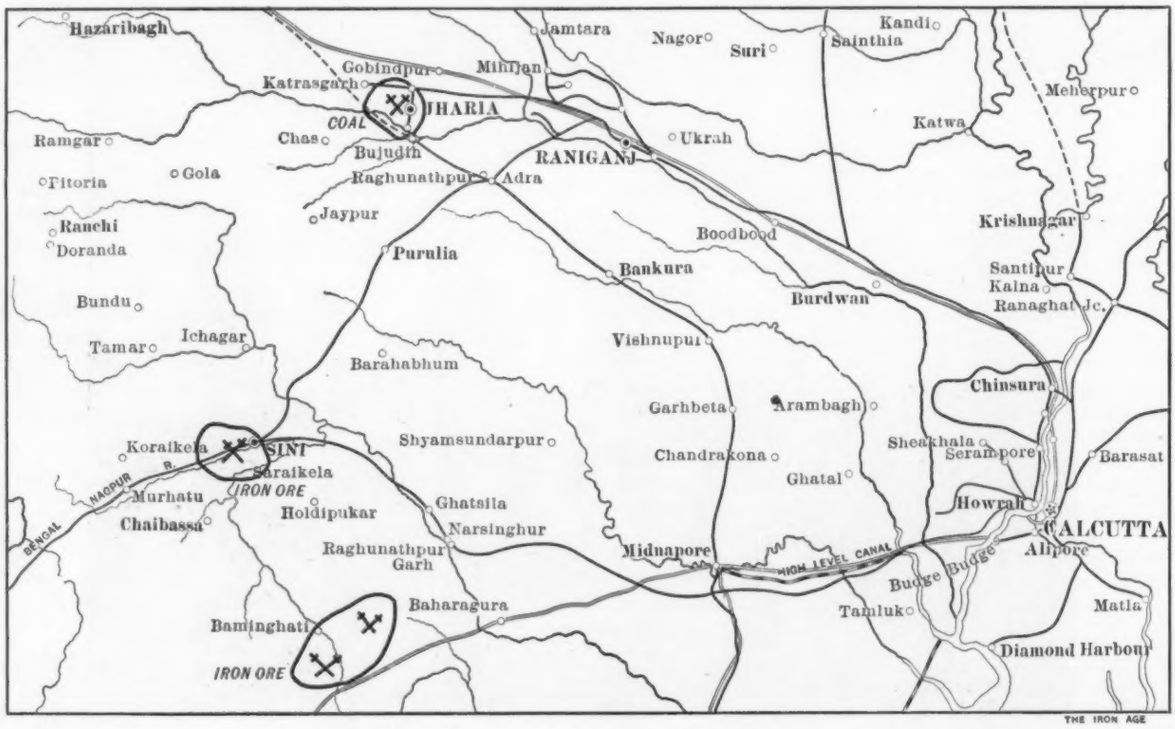


Fig. 5.—Proposed Location of Iron Plant at Sini with Reference to Iron Ore and Coal.

Like other streams in that part of India the supply is only ample during four months of the year. With requirements of about 4,000,000 gallons per day storage must be provided to the extent of 500,000,000 gallons to meet all contingencies. A number of sites for reservoirs are under consideration, which would provide more than that quantity.

The labor question is one which presents no serious difficulties, since the Bengal Iron & Steel Company has successfully recruited labor from the aboriginal tribes.

The Government of India has sanctioned and the Bengal-Nagpur Railway Company has agreed to a reduced rate of freight of 0.3 cent per ton per mile on all materials and plant required for construction, on all raw materials to the works and on finished products dispatched for shipment from Calcutta. The Government of India has also undertaken to purchase from the company at import prices 20,000 tons of steel rails annually for ten years.

The Plant Proposed.

It is proposed to erect two blast furnaces, 17 x 75 feet, with a minimum annual capacity of 120,000 tons; four 40-ton basic open hearth furnaces, with an annual capacity of 18,000 tons each; a blooming mill and a

With regard to the item of labor, the figure adopted—namely, $1.30, is 20 cents higher than the actual corresponding charge at the Barakar works.

The pig may then be estimated to cost as follows:

Raw materials:		
1.67 tons iron ore at $0.073	$1.220	
1.25 tons coke at $1.14	1.425	
0.50 ton stone at $2.15	1.075	
		$3.72
Water—maintenance of reservoir		.04
Cost above materials:		
Labor	$1.30	
Superintendence	.26	
Repairs	.25	
Supplies	.49	
		2.30
Total		$6.06

The pig will carry about 0.30 per cent. phosphorus. Should a higher phosphorus pig be required for light castings the ironstone shales of the coal fields, 100 miles distant, will be available; these carry up to 0.8 per cent. phosphorus.

This, it will be observed, is a low figure. Messrs. Perin and Weld by way of comparison have analyzed the cost, for raw materials only, for a number of leading iron making districts, with the result of making the following typical figures:

Cost of Raw Materials Assembled.

1. Middlesbrough: Cleveland pig	$6.30	On the seaboard.
Hematite pig	9.89	
2. Westphalia: Minette	8.40	To seaboard by canal.
Hematite	9.30	
3. Lorraine	6.80	200 miles from Antwerp.
4. Pittsburgh	7.80	450 miles from seaboard, rate about $2.50.
5. Buffalo	7.15	Canal to seaboard, rate 75 cents.
6. Sparrows Point	8.10	Seaboard.
7. Sini	3.72	To Calcutta 171 miles by rail.

Since the manufacture of steel in India is practically a new venture Messrs. Perin and Weld have based their estimates on the cost at a plant in the Southern States, operating under conditions very similar to those which may be looked for at Sini. They have substituted the Indian costs for raw materials as determined by them for the American figures and have increased all other items from 25 to 30 per cent. over the American figures. In this manner they reach a cost for steel ingots of $12.32, or, deducting the cost per ton of pig, a conversion figure of $6.28. In a similar manner they get at a cost for rails and beams of $17.75.

The Organization.

Under the title of the Tata Iron & Steel Company, Limited, a company is being organized in London with a capital of £1,000,000, divided into 118,000 ordinary shares of £5 each, 82,000 6 per cent. cumulative preferred shares of £5 each and £820,000 5 per cent. construction debenture stock. The directors are Charles J. Stoddart, chairman, of the Park Gate Iron & Steel Company, Limited, Rotherham; W. B. M. Bird, director of the Dalmellington Iron Company, Limited; Charles P. Perin of New York, president of the Embree Iron Company; Alfred Simson, chairman of the India General Navigation & Railway Company, Limited, and D. J. Tata of Tata & Sons, Bombay.

It is estimated that the capital required for a plant having a minimum output of 120,000 tons of pig iron and the conversion of 85,000 thereof into steel, for the purchasing of mining rights, the collieries and their extension and for all other payments, including all charges incurred during three years of construction and ample working capital will not exceed £1,500,000. The initial issue of capital will provide £1,000,000, and it is intended to raise £500,000, or such less sums as may be required, by a permanent debenture issue when the share capital has been expended.

The Hicks Locomotive & Car Works.

The Hicks Locomotive & Car Works, Chicago, capitalized at $1,200,000, operating two large plants at Chicago Hights, Chicago, Ill., for the construction of railway passenger coaches and wooden freight cars and the repair of old coaches, freight cars and locomotives, is the outcome of a business established by F. M. Hicks at Chicago in 1896 for the purchase and sale of second-hand rolling stock. The tremendous increase in the carrying capacity of freight cars in recent years, which necessitated the adoption of heavier locomotives, has resulted in the discarding by the large roads of much rolling stock in serviceable condition, and with repairs to worn parts these cars and locomotives are eagerly sought by small roads throughout the United States and Mexico, where the traffic requirements are not nearly so severe as on the trunk lines.

To facilitate the rebuilding of second-hand locomotives a repair shop was established in Chicago Heights in 1897, and in 1901 a coach repair shop was built for the repair and construction of passenger cars. This plant with numerous additions made in the past few years now has a capacity of 20,000 new coaches monthly, and is equipped with pits in the erecting shop for 24 locomotives. Last year the newly completed buildings of the abandoned pipe mills of the Aermotor Company at Chicago Heights were acquired and the plant was thoroughly equipped for the manufacture of wooden box and gondola freight cars, its capacity being 15 a day. This plant is designated as the East Works and the old plant as the West Works, the former being located on a site of 58 acres, while the buildings of the latter cover 17 acres. Excellent transportation facilities are afforded both plants by direct connections with the Chicago & Eastern Illinois, the Michigan Central, the Elgin, Joliet & Eastern, the Chicago Terminal and the Indiana Southern railroads.

The West Works consists of an engine erecting shop, 170 x 250 feet, with pits for 24 locomotives, and a part of this building, 65 x 170 feet, is occupied by the machine shop. A 5-ton electric traveling crane traverses this building and extends into the boiler shop and into the storage yard as well, the latter being commanded by a crane of like capacity, with a travel of 271 feet. Adjoining the locomotive repair plant are located the boiler and blacksmith shops in one building, 230 feet long by 50 feet 4 inches wide. An electric transfer table 70 feet wide operates between the locomotive plants and the coach repair shop and is used for the transfer of cars and locomotives from one building to another. The coach erecting shop, in which second-hand coaches are repaired and new ones built, is 197 feet long and 170 feet wide. The wood mill and cabinet shop adjoins this building and is 70 x 158 feet. The engine tender building is 60 x 158 feet. The dry kiln and lumber shed are located in a building 64 x 80 feet, and the storeroom in which the material is carried in stock is 68 x 140 feet. Plans have also been prepared for a steel car repair and erecting shop, 180 x 400 feet.

The main building of the East Works, where new freight cars are built, is 140 x 280 feet, and contains the erecting shop and wood machine shops. The truck shop adjoins this and forms an L thereto, 65 x 220 feet. The blacksmith shop is 60 x 280 feet and the power house which adjoins this building is 60 x 80 feet. The storeroom adjoining the truck shop is 40 x 60 feet. Eighteen standard gauge tracks serve the yards and shops.

At present orders for 300 stock cars for the Chicago Great Western and 300 gondola cars for the Midland Valley Railroad are being filled. At the time of the recent incorporation of this company under the laws of the State of New Jersey officers were elected as follows: F. M. Hicks, president; Elliott C. Smith, vice-president; Wm. McInnes, treasurer, and E. Hope Morton, assistant treasurer.

The Production of Black Plates and Tin Plates in 1905.

The report of the American Iron and Steel Association just issued shows that the production of black plates or sheets for tinning in 1905 amounted to 507,587 gross tons, against 472,569 tons in 1904, an increase of 35,018 tons, or over 7.4 per cent. Of the production in 1905 Pennsylvania made almost 50.5 per cent., against over 53.4 per cent. in 1904. Ohio, West Virginia, Indiana, Illinois, Maryland and Missouri also made black plates or sheets for tinning in 1904 and 1905. Of the total production of black plates or sheets in 1905, a little over 3000 tons were rolled from iron and over 504,000 tons from steel, against a little less than 3000 tons from iron and over 469,000 tons from steel in 1904. The report estimates the production of tin plates and terne plates in 1905 as amounting to 493,500 tons, as compared with an estimated production of 458,000 tons in 1904, an increase of 35,500 tons, or over 7.7 per cent. The preliminary statistics of the production of tin plates and terne plates in 1904 were recently made public by the Bureau of the Census. The tin plate production is given as amounting to 867,526,985 pounds, and the terne plate production as amounting to 158,857,866 pounds; total, 1,026,384,851 pounds.

A molybdenum mine has been found 50 miles northwest of Pitt Lake, British Columbia, and about the same distance from Vancouver, according to a report of L. Edwin Dudley, United States Consul at Vancouver. An American company with a representative from Seattle has been doing development work and has received an order for 200 tons to be shipped to London. Machinery will be set up as soon as a road can be completed. At present access to the mine is difficult.

The American Gauge Tester.

A dead weight gauge tester, with improvements which make principally for increased facility in handling the apparatus, has been brought out recently by the American Steam Gauge & Valve Mfg. Company, Boston, Mass. The claim is made that it possesses all the advantages of the mercury column, inclosed in a much smaller space, and that it can be relied upon to be absolutely accurate at all times. The owner of one of these testers is relieved of the necessity of returning test gauges to the factory for readjustment from time to time in order to be assured of their accuracy. Two views of the device are shown, Fig. 1 being a general exterior and Fig. 2 a sectional view, from which the following description of its construction and operation will be readily comprehended:

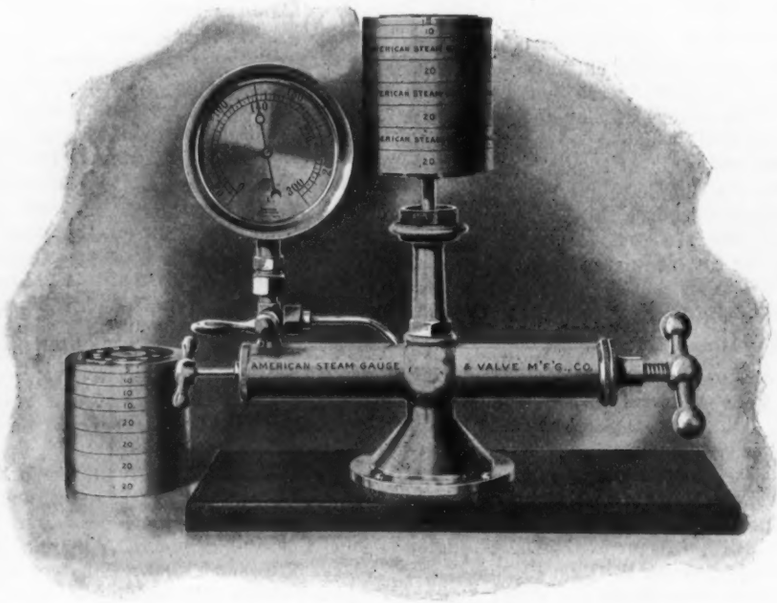


Fig. 1.—The New Dead Weight Gauge Tester Made by the American Steam Gauge & Valve Mfg. Company, Boston, Mass.

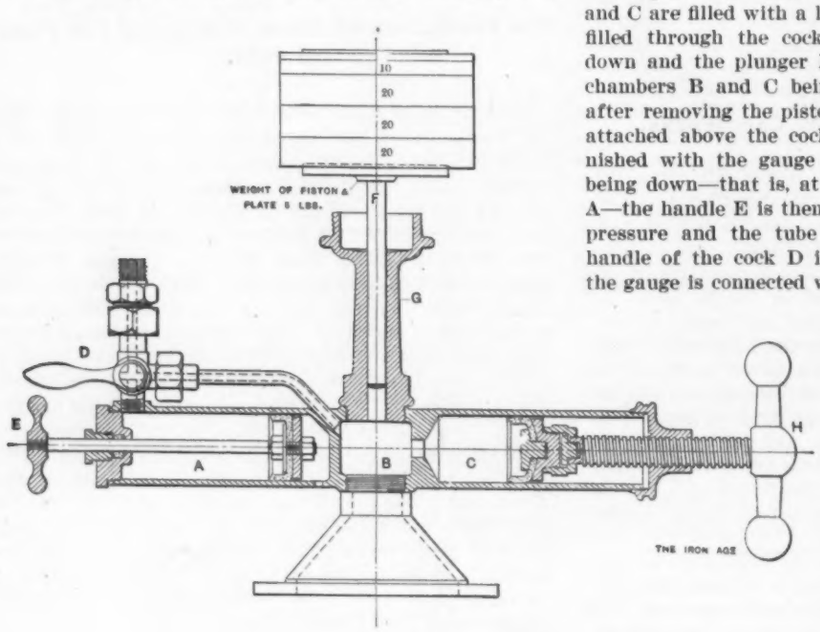


Fig. 2.—Vertical Section of the American Dead Weight Gauge Tester.

The principal parts of the pump are a chamber, B, connected directly with the gauge to be tested, and the cylinder G, containing the piston F, upon which the weights act, the cylinder C having a screw plunger for raising the piston F under weight and the auxiliary oil chamber A having a plunger for filling the connection between the gauge and the main chamber G through the three-way cock D. The weights and the area of the piston F are proportioned to produce directly on the gauge to be tested the pressures indicated on the weights. The weight of the piston and the attached plate alone produces a pressure of 5 pounds, and additional weights, in sizes corresponding to pressures of 5, 10 and 20 pounds, are placed upon it to the required amount. By various combinations of the weights any pressure that is a multiple of 5 pounds may be obtained. The oil is contained within the pump at all times, eliminating the necessity of pouring it in and out before and after testing.

To place the tester in commission the chambers A, B and C are filled with a light mineral oil, chamber A being filled through the cock D when the handle is turned down and the plunger handle E is pushed clear in, and chambers B and C being filled through the cylinder G after removing the piston plate. A gauge to be tested is attached above the cock D by suitable connections furnished with the gauge tester. The handle of the cock being down—that is, at right angles to the supply pump A—the handle E is then pulled out until the gauge shows pressure and the tube is filled. Then by turning the handle of the cock D into the position shown in Fig. 2 the gauge is connected with the chamber B. The weights are next added on the piston F until the desired pressure is reached. At all times during testing, the plate on the piston F should be kept about 2 in. above the cylinder G by screwing the hand wheel H in or out, which, of course, has no effect on the pressure, but it is not necessary to continually manipulate this plunger. It is usually sufficient to raise the table and plunger twice while testing to 500 pounds.

Before disconnecting the gauge the handle of the cock D is turned down and the handle E is pushed in. All oil is then drawn off or drained from the gauge tube into the chamber A, preventing spilling of oil when the gauge is disconnected. The necessary wrenches, hand set, hand jack, four connection nipples and pliers accompany the instrument for connecting the gauge and adjusting it.

The Osgood Oil Grooving Machine for Bearing Bushings.

The oil grooving machine shown in Fig. 1 is designed for manufacturers of large numbers of boxes for the bearings of machinery, vehicles, &c. In general character of design it resembles an engine lathe, the bushing to be grooved being held in a fixture revolved by the headstock.

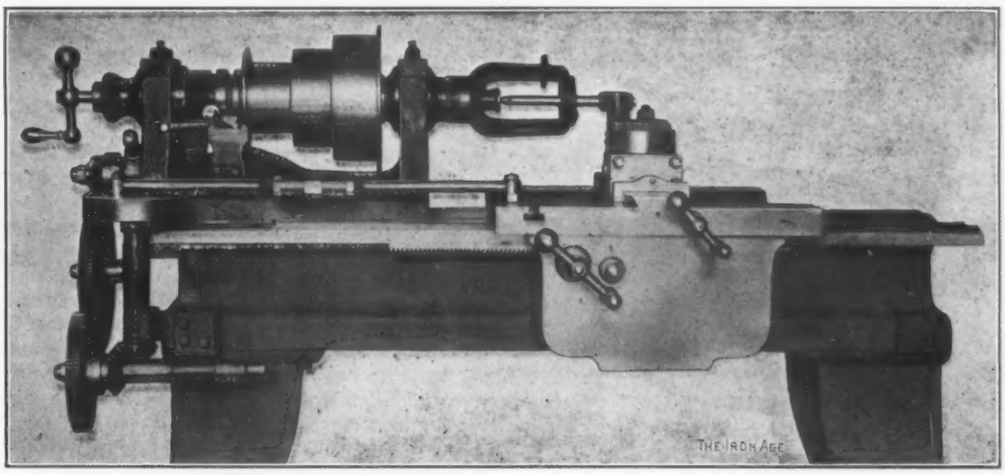


Fig. 1.—A Machine for Cutting Oil Grooves in Bearing Bushings, Built by Isaac Osgood, Amesbury, Mass.

On the carriage is a tool post which takes a boring tool holder of the size required for the bushing to be grooved. A crank mechanism causes the carriage to oscillate, sending the boring tool in and out of the bushing at a predetermined ratio of oscillations of carriage to revolutions of the spindle. The drive of the carriage is accomplished through a series of gears from the spindle to a vertical shaft, at the top of which is a crank disk. The crank pin is adjustable in its disk to determine the length of travel of the carriage. The ratio of oscillations of carriage to revolutions of spindle is determined by change gears in the chain of gears from the spindle. Fine adjustments

Fig. 2.—A 12-In. Bushing with 2½-In. Bore, Showing Grooves Cut Inside and Outside.

of the tool to the work are accomplished by a turnbuckle in the connecting rod.

In Fig. 2, showing a bushing grooved inside and outside, it will be noticed that the groove is a double one, starting from opposite sides of the circumference. To accomplish this after one groove is completed the work is permitted to make one-half a revolution while the carriage is stationary. The driving pinion for the crank mechanism is loose on its spindle, but is normally engaged with it through a positive clutch except when the clutch handle is held back by the operator. The handle is held in the engaged position by a powerful spring. The clutch has two teeth, at opposite sides. A pull of the handle while the machine is operating permits the necessary half revolution of the spindle while the boring tool is idle, and consequently the cutting of the second groove begins with slight interruption of the work. The tool is fed by hand, and there are stop gauges front and back for use in cutting inside and outside grooves. Several sizes of fixtures for different sized bushings are furnished with the machine, and others may be easily made. The ordinary axle box requires one minute to groove, and the time on all kinds of bushings is very short, especially when compared to hand work with a chipping tool. The machine has been used for grooving bushings up to 20 in. long and 6 in. in internal diameter.

The machine is manufactured by Isaac Osgood, Amesbury, Mass., and is marketed by the Chandler & Farquhar Company, Boston.

A Feat in Rolling Mill Reconstruction

An engineering feat that has probably never before been equaled in rolling mill practice has just been accomplished at the South Works of the Illinois Steel Company under the supervision of W. A. Field, general superintendent of this extensive plant. Owing to the almost continuous run since the first of the year extensive repairs to the rail mill became imperative, and improvements to facilitate production were also desired. With the output of the mill sold to January 1, 1908, with no provisions for stoppages, an engineering problem was presented that required great skill to solve.

It was decided that on account of the intervening holiday repairs should be made the first week in July, and on Saturday evening, June 30, the mill was shut down. The work of installing new equipment continued night and day for six days, and on Friday afternoon, July 6, the mill was again placed in successful operation. During this period an entirely new roller table was installed and a section of another was replaced. The second roughing stand of rolls was moved back from the first stand a distance of 30 ft., permitting of the rolling of longer sections, one of the engines was compounded and fitted with a new flywheel, and a new hot saw was installed. The foundations were all set while the mill was in operation, thus saving considerable time. A crane runway between two buildings of the plant was also connected during this period, and other repairs were made to parts that became worn during the extended period of continuous operation.

Experiments are being carried on which may result in the introduction of sugar beet growing in England. It is proposed to establish a beet sugar plant in Lincolnshire, but the suitability of the soil to raise large crops has yet to be ascertained. Free seed has been given to a number of farmers, who are this year devoting part of their land to the sugar beet, and if successful crops result, sugar works will be erected

The Duntley Electric Drills.

The air cooled Duntley electric drills manufactured by the Chicago Pneumatic Tool Company, Chicago, are built in three distinct types, each adapted to its own particular class of work, but all embodying practically the same mechanical features, differing only in the design and general arrangement of the electrical parts. These three types are known as the single-motor, two-motor and three-motor drills, respectively.

The single-motor drill, which is adapted to all classes of general work for drilling iron or steel up to 1¼ in. in diameter, as its name indicates, is provided with one revolving electrical element or armature. The magnetic field casing shown in Fig. 1 is a steel casting of high permeability, to which are bolted the drop forged pole pieces. The armature, Fig. 3, is of the slotted type, with hand wound coils of double silk covered magnet wire secured in place by wedges, no binding wire being used. The commutator is built up of hard drawn copper bars, insulated with amber mica, and the commutator sleeve is of machinery steel. Carbon brushes are used. The shaft is of high carbon steel, with the pinion cut as an integral part of it and is hardened and ground at the bearings. Ball bearings of the Hess-Bright type support the armature, provision being made for slight end play.

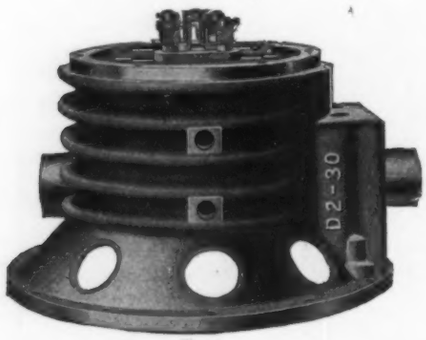


Fig. 1.—The Magnetic Field Casing of the Single-Motor Duntley Drill.

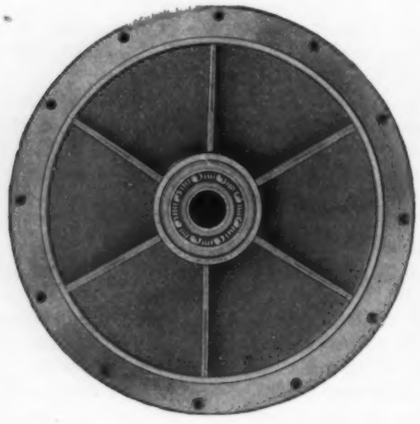


Fig 2.—The Diaphragm Under the Motor.

Fig. 3.—The Armature.

Fig. 4.—Top View of the Planetary Gear Case.

The hollow handles are located on a line near the center of gravity of the drill and the flexible current conducting cable leads through one of them to the motor. A special quick break switch is mounted in the drill housing at the base of one of the handles and is protected from external injury. This switch cuts off all current entering the drill, including the shunt field current, which in some foreign makes of drills is broken only at the cable socket. A reversing switch is furnished when so ordered and is arranged so that the drill cannot be reversed without first throwing off the current by pushing the "off" button on the switch. The breast drill and the single-motor drill, having capacities of ⅜ and ½ in. in iron, respectively, are shunt wound, while the larger drills are compound wound. Fig. 2 shows the diaphragm carrying the lower ball bearing and serving to separate the electrical from the mechanical transmission, so as to exclude all oil from the windings. Fig. 4 is an illustration of the planetary gear and its case. Fig. 5 is another view of this part, showing the ball thrust bearing for the drill spindle, located at the base of the gear case casting. This system of gearing, first introduced in the Boyer air drills manufactured by this company, brings diametrically opposite teeth of the pinion into action simultaneously, which balances the strain on the bearings and makes the tool symmetrical, with all of the thrusts in one straight line between the point of the drill and the point of the feed screw.

The gears are all hardened and special provision is made for the application of grease. When running at their normal peripheral speed of about 475 ft. per minute the gears are noiseless, and on a drill capable of drilling 1¼-in. holes in iron or steel the energy required to drive them up to this speed unloaded is about 18 watts, or 1-40 hp. The total energy required for this drill running idle at full speed is 83 watts, or 1-9 hp., including all mechanical and electrical losses. The temperature rise of the drill after 10 hours full load service is guaranteed not to exceed 63 degrees F. above the temperature of the surrounding air. This is accomplished by the special electrical construction in connection with a ventilating system which keeps up a constant stream of air through the windings. A fan on the armature shaft revolving at the comparatively high speed of this shaft imparts a good velocity to the air. With the larger drills of this type working on 1¼-in. holes in good cast iron 1 cu. in. of metal per minute can be easily removed, which is equivalent to a feeding speed of 1 in. per minute.

Fig. 5.—Side View of Above, Showing Ball Thrust Bearing.

Machines capable of drilling holes larger than 1¼ in. in diameter are made in two and three motor types, for if one armature were used it would have to be quite large in diameter and the speed would have to be reduced to keep down the peripheral velocity. By the use of two or three small armatures properly geared to the main driving spindle a greater power can be secured for a given weight because the armatures can be run at higher

speeds with perfect safety. Figs. 6 and 7 show sectional views of the two and three motor drills, respectively. Since the construction of these drills is somewhat analogous they can be described together. Figs. 8 and 9 show the plan arrangement of the armatures and fields which are peculiar to the Duntley drills. The outer casing is of nonmagnetic material.

The fields are compound wound and a very low start-

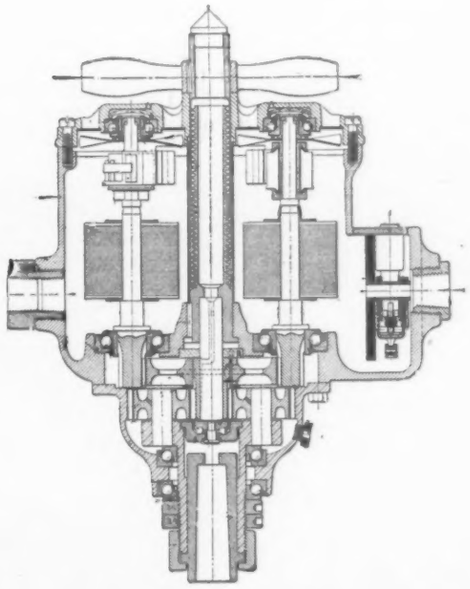


Fig. 6.—Vertical Section of the Two-Motor Drill.

ing current is required, and at the same time a fairly close speed regulation is obtained. The fans are placed on the upper or commutator ends of the armatures, so that the air is drawn in and forced out at the lower end. The electrical construction of the parts, including the switch, is the same in general as for the single motor drills previously described. The planetary gear arrange-

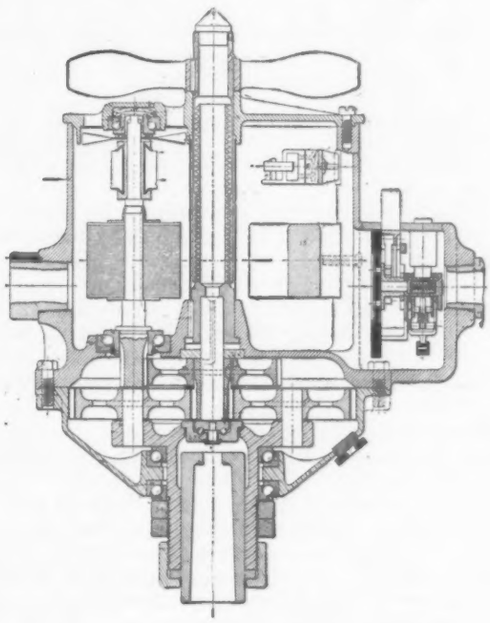


Fig. 7.—Vertical Section of the Three-Motor Drill.

ment is similar, involving only such modifications as are made necessary by the increase in the number of driving pinions.

The two and three motor drills are, as previously stated, adapted for heavy work and are used for drilling in iron or steel up to 2¼ in. and for boiler plate reaming and staybolt tapping. On large holes they have removed 2¼ cu. in. of cast iron per minute with comparative ease.

The World Demand for Iron and Steel.

The London *Iron and Coal Trades Review*, in discussing the iron trade outlook, takes an optimistic view of the probable world demand for iron and steel. While calling attention to the familiar fact that the steel rail trade is no longer the dependence of the iron trade in the way it was 20 or 25 years ago, the article points out that if railroad expansion alone be taken as a gauge the promise is excellent. The projects ahead of the iron trade which are particularly mentioned are the Siberian Railroad extensions and feeders, with a total of 7000 miles; the Cape to Cairo Railroad, which is expected to be about as long; the Transcontinental Railroad of Australia; the project for connecting the different republics of South America; the extensive lines planned for the Chinese Empire, to-

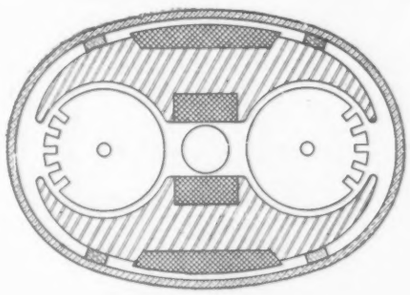


Fig. 8.—Horizontal Section through the Fields and Armatures of a Two-Motor Drill.

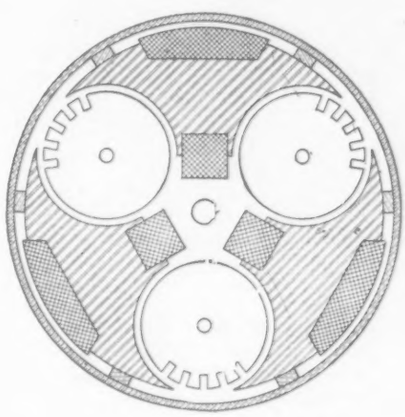


Fig. 9.—Horizontal Section through the Fields and Armatures of a Three-Motor Duntley Drill.

gether with important development in India and Japan. The view is taken that it is not unreasonable to expect a doubling of the existing railroad mileage of the world—550,000 miles—within the next 25 years. Reference is made also to the large consumption of steel for building purposes; to the continual increasing use of wire in agricultural districts and of nails in all the countries of the world, with possibilities of special expansion in China, India, Africa and Siberia; the increasing demand which will be stimulated by the growth of the electrical industry, and the growth to be expected from the mining enterprises of the world. The review, which it is explained was written rather to illustrate movements and tendencies than to take an inventory of the lines of expansion for the iron and steel trades, concludes with the statement that "those who fear that demand will not keep pace with supply may see their most pessimistic anticipations realized from time to time, but in the long run the supply is as least as likely to fail as the demand."

It is noticed at smelters that the acid fumes render more energetic the galvanic action between the coating and the steel body of galvanized sheets.

The Premier Lubricator for Gas Engine Cylinders.

For the lubrication of gas or gasoline engine cylinders the Lunkenheimer Company, Cincinnati, Ohio, has recently brought out the Premier lubricator herewith illustrated. The cup is of high grade bronze and is compactly constructed, the aims being positive and proper lubrication and an ability to withstand severe service. There is claimed to be no likelihood of the lubricator shaking to pieces as a consequence of the jarring of the engine.

The filling hole is large, which is desirable, especially when the cups are applied to motor boat engines, since it permits the use of a filling can having a large spout. A tight joint between the filling plug H, Fig. 1, and the top of the cup is maintained by a lead washer, I, which, being softer than the brass, conforms readily to any irregularity in the bearing surfaces. This gasket is not likely to wear out because it is subjected to very little friction, but when it does it can be quickly and easily renewed. While the engine is running the cup may be refilled by using the valve C, which can be quickly closed and opened. The stem of this valve is well packed by the stuffing box J.

The regulation of the feed is accomplished through the valve K. This valve has a fine needle point and the thread on the stem is of fine pitch, hence a very close adjustment can be obtained. The stuffing box L serves not only to prevent leakage around the stem valve K, but by exerting a proper amount of friction on the stem tends to avoid the upsetting of the valve.

The object of the tube T in the cup A is to equalize the pressure on the oil, allowing the oil to drop by gravity through the sight feed to the cylinder. In order that back pressure, due to leakage past the pistons, may not interfere with the formation of the drops in the sight feed and cause the oil to spatter around the glass the shank B of the cup is fitted with a large check valve, D, Fig. 2. It has been found that where the back pressure is unusually great, as in engines with worn piston rings, the ball check alone does not entirely remedy the trouble. With the further provision of a baffling cap, E, just above the valve C, the gases escaping past the ball check D are effectually muffled and diffused and the drops form perfectly, drop freely and steadily and the sight feed glasses never fill up.

Another important feature is the practical construction of the bull's-eye sight feed, a detail of which is given in Fig. 3. This comprises the holder M, retaining ring N, two rubber washers O and O and the bull's-eye sight feed glass P. The glass is thick, so that there is little danger of its being broken, but if that should happen the improved method of securing it enables it to be easily replaced. This is done by first removing the holder M, after which the retaining ring N can be removed by inserting a nail in one of the slots R and giving it a slight tap with a hammer, when it can be easily withdrawn with the fingers.

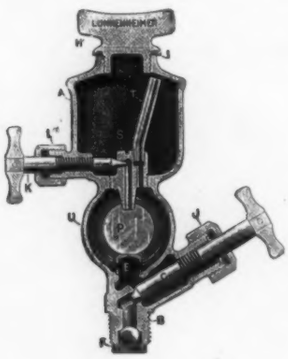


Fig. 1.

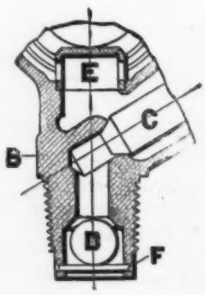


Fig. 2.

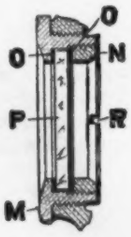


Fig. 3.

Section and Details of the Premier Lubricator for Gas and Gasoline Engine Cylinders, Made by the Lunkenheimer Company, Cincinnati, Ohio.

The Production of Fluorspar in 1905.

The total production of fluorspar in 1905, as reported by Edmund Otis Hovey of the United States Geological Survey, was 57,385 net tons, valued at $362,488, most of which came from the mines in Illinois and Kentucky. This compares with 36,452 net tons, valued at $234,755, in 1904. The production last year surpassed the previous record year, 1902, by 9367 net tons. The companies report such active demand for fluorspar, particularly for use in open hearth steel furnaces, that the production for 1906 is likely to exceed greatly that for 1905. The operators in Illinois and Kentucky are seriously hampered in working their mines by the difficulty of getting reliable and competent workmen.

The Illinois production amounted to 33,275 net tons, valued at $220,206, an increase of 16,070 net tons over the reported production of 1904. Kentucky has fallen to second place, the output in 1905 being 22,694 net tons, valued at $132,362. This, however, is an increase of 3598 net tons over 1904. In Tennessee, 25 tons of fluorspar were mined last year, but not sold.

The quotations at Pittsburgh, which determine the prices the Illinois and Kentucky miners receive, are partly controlled by the prices of the foreign fluorspar, which supplies part of the Pittsburgh trade and almost the whole of the Eastern demand. The Illinois mineral was sold for a considerably higher average price than that from Kentucky, the price of the Illinois crude fluorspar ranging in 1905 from $5 to $8 per net ton, with an average of $5.26, while the Kentucky crude spar ranged from $4 to $5 per ton, with an average of $4.74 per ton. The Tennessee lump spar is of high grade, having realized an average price of $662 per net ton. The Colorado fluorspar brought an average price of $7.09 per ton. The prices reported for ground fluorspar in 1905 were from $10 to $12 per net ton, with greater demand for the higher priced material than could be satisfied. In 1904 the average price was $8.44 per net ton; in 1903, $9.99, and in 1902, $9.98. Contracts have been made for a still higher price in 1906.

The highest grade of fluorspar, "American lump No. 1," is pure white or clear pale blue and does not contain more than 1 per cent of silica. Such material is used in the manufacture of opalescent glass, in the making of enamels and "agate" ware and in the production of hydrofluoric acid and other chemical compounds of fluorine. Both lump and ground mineral are shipped for these purposes. The second grade, "American lump No. 2," includes the colored varieties and is limited to a content of not more than 4 per cent. of silica. This is sold in lump or gravel form and is used in the manufacture of open hearth steel, imparting great fluidity to the slag. The third grade, "gravel," includes all of the mineral that carries more than 4 per cent. of silica and all that is mixed with calcite. It is used in foundry work, on account of the clean character it gives to iron castings. Through lack of knowledge of this property the demand for fluorspar for foundry work is much less than it should

be. Other grades known to the market are "crushed," "ground fine" and "ground extra fine."

A Notable Column Casting.

The cast iron column shown in the accompanying illustration is one of several recently cast in the foundry of the Hansell-Elcock Company, Chicago, to be used as stack supports for one of the blast furnaces of the Illinois Steel Company, Chicago, at its South Chicago plant. These columns are 27 feet long, 27 inches in diameter at the bottom and 24 inches in diameter at the top. Their base measurements are 42 inches square and 6 inches thick, and they weigh 16,180 pounds each. They were cast horizontally and the iron was poured at both ends, the pouring requiring 25 minutes. The molding and casting of each column was done by two men working only two days. Several smaller columns to be used for the same purpose are now being cast in this foundry for the Illinois Steel Company.

A 16,000-Pound Column Cast by the Hansell-Elcock Company, Chicago.

May Iron and Steel Exports and Imports.

The May record of exports of iron and steel shows an increase of more than 20 per cent. over the tonnage of exports in April. The total for such products as are reported by weight was 136,592 gross tons, as compared with 120,015 tons in April, 138,679 tons in March, 97,719 tons in February and 109,506 tons in January. The value of all iron and steel exports for May, not including ore, was $15,686,322, as against $14,933,495 in April. It is interesting to note that the exports for the present fiscal year will considerably exceed those of the fiscal year 1905, though home prosperity has been greater in the past 12 months than in the 12 months ending with May, 1905. The difference for the two 11 month periods compared below is not as great as the totals would indicate, however, the item of "pipes and fittings" not being reckoned in tons in the statement of last year, but only by value. The following table shows the exports of such commodities as are reported by weight for the month of May and for the 11 months ending with that month in 1906 and 1905.

Exports of Iron and Steel.

	May.		Eleven months.	
	1906.	1905.	1906.	1905.
Commodities.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	5,422	3,047	52,834	55,581
Scrap	899	798	9,324	18,994
Bar iron	6,579	2,662	38,698	30,547
Wire rods	454	62	6,186	14,875
Steel bars	2,562	2,124	19,990	23,235
Billets, ingots, blooms	23,053	17,599	255,991	226,452
Hoop, band, scroll	637	83	4,720	2,751
Iron rails	....	....	....	78
Steel rails	37,789	14,709	319,830	387,089
Iron sheets and plates	858	757	8,864	4,631
Steel sheets and plates	9,291	5,343	71,558	62,112
Tin plates and terne plates	2,577	1,045	10,422	9,448
Structural iron and steel	7,266	6,720	85,949	68,290
Wire	18,305	14,247	148,738	113,670
Cut nails	355	691	6,144	7,518
Wire nails	4,723	3,813	41,176	33,315
All other, including tacks	651	360	4,055	3,506
Pipes and fittings*	15,171	....	138,774	....
Totals	136,592	74,060	1,223,253	1,062,092

* Quantity not stated prior to July 1, 1905.

The principal increases over April were in pipes and fittings, steel rails, billets and wire. There was a falling off in steel sheets and plates, in pig iron and in structural steel.

May showed also an increase in imports of iron and steel as compared with April. Of products reported by weight the total was 45,706 tons, as against 37,920 tons in April, 50,167 tons in March, 28,407 tons in February and 46,516 tons in January. The principal increases over April were in pig iron (the imports being largely spiegel and ferromanganese), and tin plates, the two lines representing an increase of over 8000 tons. There was a falling off in structural steel, but for the 11 months structural material increased greatly over the corresponding period in the preceding year. The table below gives May imports in the two years and comparisons for the 11-month periods:

Imports of Iron and Steel.

	May.		Eleven months.	
	1906.	1905.	1906.	1905.
Commodities.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	28,848	24,839	248,884	105,860
Scrap	1,399	1,790	25,320	10,981
Bar iron	1,072	1,778	33,466	22,579
Rails	757	252	9,246	8,748
Hoop, band and scroll	2,324	102	10,936	1,687
Billets, slabs, bars, &c., steel in forms n.e.s.	1,684	1,184	17,458	8,891
Sheets and plates	364	159	2,618	1,877
Tin plates and terne plates	4,962	5,235	49,479	66,489
Wire rods	904	1,445	16,349	18,232
Wire and articles made from	604	475	4,079	3,592
Structural iron and steel	2,762	162	33,134	2,538
Chains	21	29	285	247
Anvils	5	13	192	155
Totals	45,706	37,463	451,446	251,876

The value of iron and steel imports in May, not including ore, was $2,859,492, as against $2,548,375 in April. The total value of all such imports for the 11 months ending with May, leaving out ore, was $26,156,365, as against $20,863,906 in the 11 months ending with May, 1905. The total value of all exports of iron and steel, excepting ore, for the 11 months was $146,900,582, as aggainst $122,907,266 for the 11 months ending with May, 1905. The exports of iron ore in the 11 months ending with May were 195,840 gross tons, while the imports were 888,469 gross tons.

Recent experiments are said to have demonstrated that cadmium gives protective coatings for iron much superior to zinc, says the London *Engineer*. The coat has the same aspect as zinc, but is much more adhesive and harder. Like zinc, it finally becomes tarnished, but less rapidly. It withstands the effects of acid fumes better than zinc.

The Corrosion of Pipe in Coal Mines.

It has been the general opinion that wrought iron pipe will give longer service in the sulphur water of coal mines than that made of soft steel. One of the largest coal mining companies, which had been specifying nothing but strictly wrought iron pipe, started a series of tests of the two materials under service conditions in its mines in October, 1905. Pieces about 1 ft. long were cut from separate lengths of iron and steel pipe and fastened in a wooden crate, so that they would be insulated from each other and be equally subjected to the free flow of water inside and out.

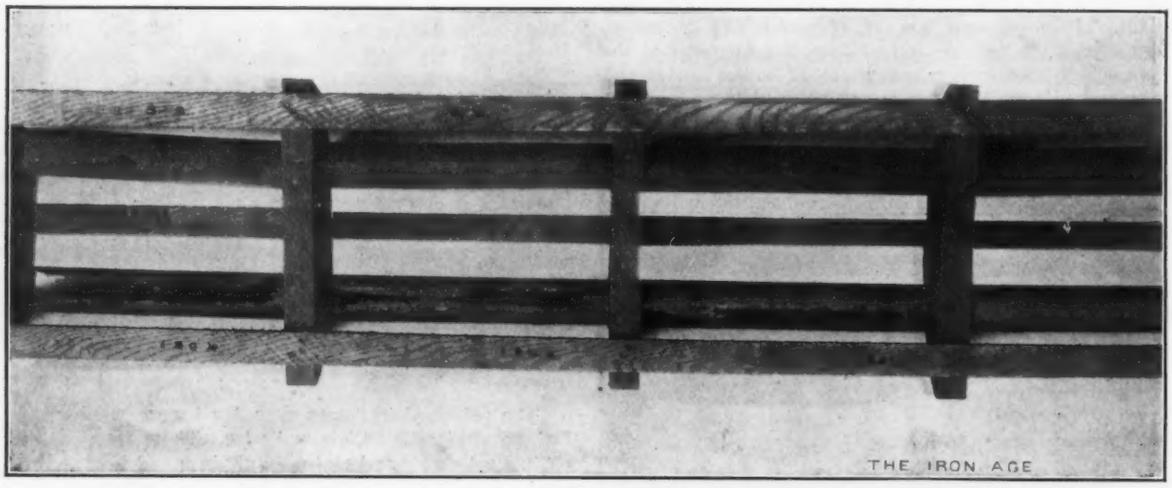
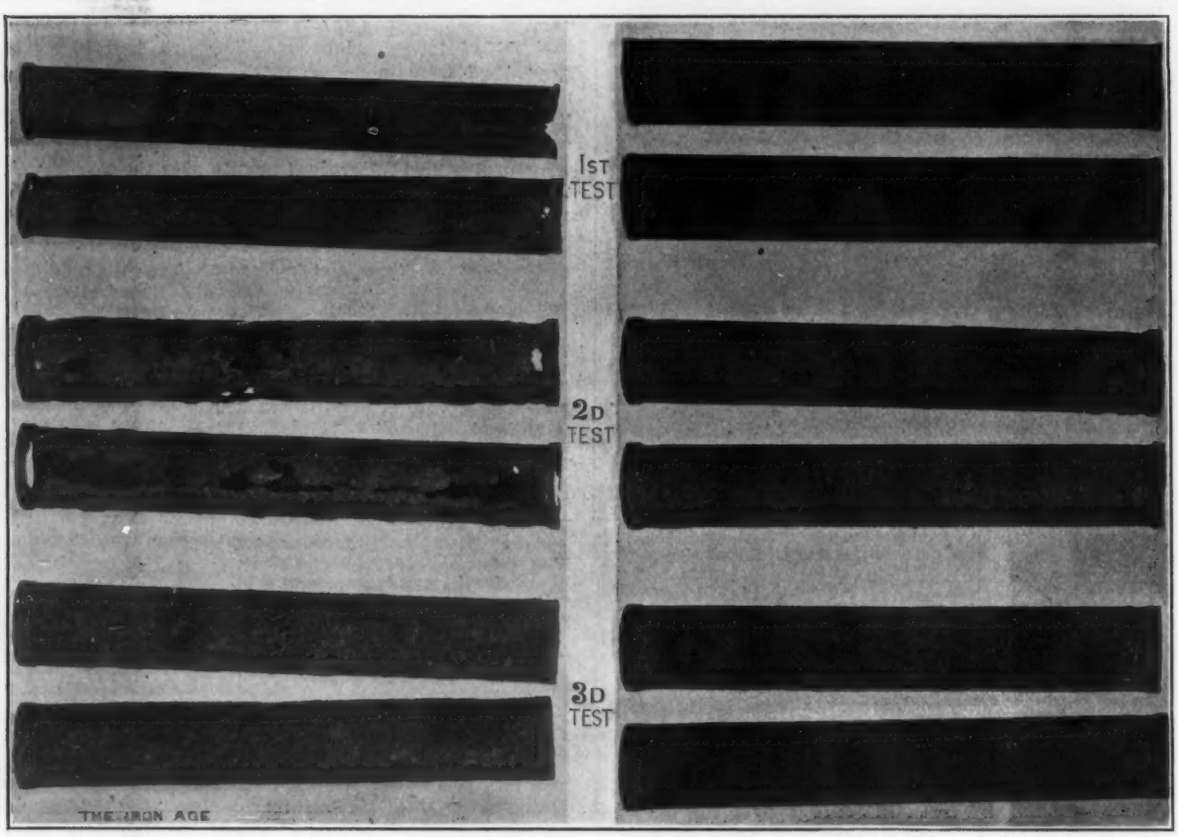


Fig. 1.—Coated Pieces of Steel and Wrought Iron Pipe as Affected by the Sulphur Water of Coal Mines. The Upper Pipes Are of "Spellerized" Steel.



Iron. Steel.

Fig. 2.—Other Samples of Steel and Wrought Iron Pipe as They Appeared After Continued Submergence in the Waste Water from Coal Mines.

Fig. 1 shows one of these crates of samples in the condition in which it was found after being taken from the discharge main of the mine where it had been fastened wholly submerged. Four tests of this character were made, using various makes of wrought iron against the National Tube Company's steel, which is being given a special treatment in the process of manufacture with the object of increasing its power to resist corrosion. In every case the steel pipe showed more uniform corrosion, with the surface less pitted than that of the iron pipe. Fig. 2 shows some samples from the other tests referred to, in which the evenness of corrosion was quite marked in favor of the specially treated, or "Spellerized," steel.

The results of these tests are of special interest in view of the important discussion at the recent Atlantic City meeting of the American Society for Testing Materials on the relative corrosion of iron and steel. The appointment of a committee of that organization to study and report upon causes and prevention of corrosion should result in bringing out information and suggestions that

will aid in the effort to prolong the life of iron and steel in service. There has been much inexact statement in connection with this subject, and tests conducted as nearly as possible to service conditions will do much to clear up the conflict in current statements. Meanwhile the efforts of manufacturers, whether of iron or steel, to improve the quality of their product, so as the better to resist the increasing corrosive tendencies of modern service conditions, will prove the best possible answer to untrustworthy observation or conclusions based on theory.

The process to which the so-called "Spellerized" steel is subjected, as referred to above, is understood to be mechanical, so that uniform treatment of the pipe is assured. The National Tube Company has not given out any details of the operation as yet.

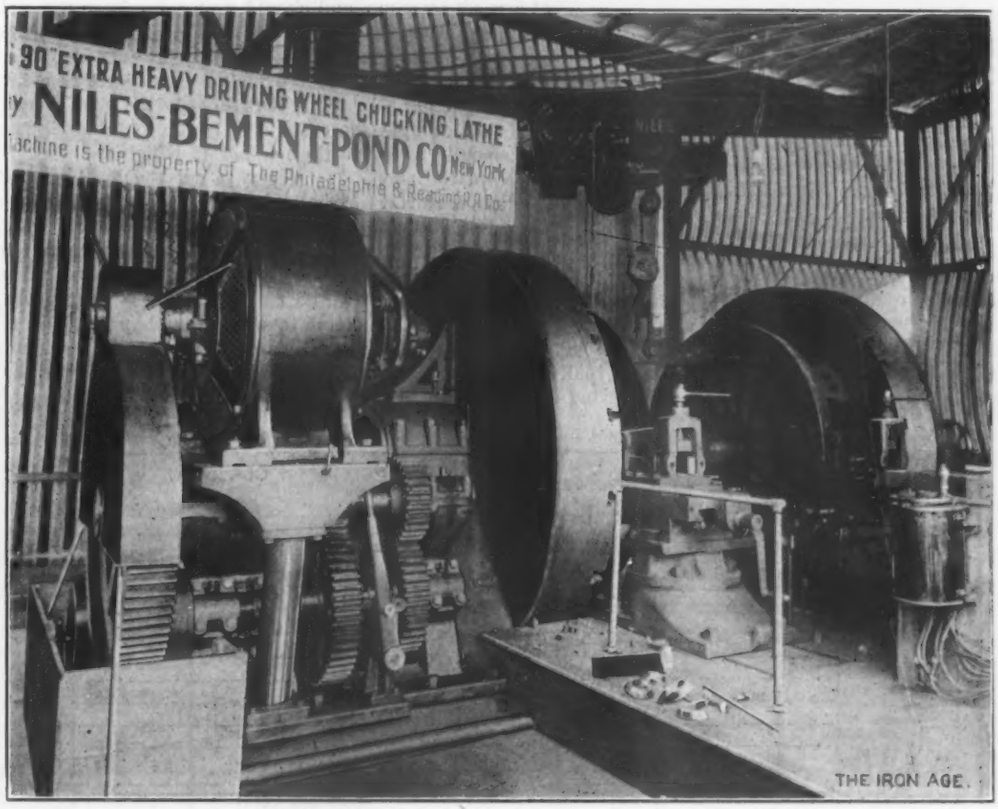
A Tire Turning Record.

At the recent Master Car Builders' and Master Mechanics' conventions in Atlantic City the Niles-Bement-Pond Company, New York City, had on exhibition a 90-in. extra heavy driving wheel chucking lathe, one of three sold to the Philadelphia & Reading Railroad Company to replace a number of smaller machines. A special booth was built near the Pennsylvania station and, as shown in the interior view of the booth given herewith, the lathe was in running order, so that during the convention actual demonstrations of its working ability could be given. The results achieved were even more wonderful than those referred to in the article on "Remarkable Tire Turning" printed in *The Iron Age* February 8, 1906.

The machine was set on a concrete foundation and was driven by a 50-hp. motor, with a 7½-hp. motor for operating the tailstock. The wheels were placed in the machine with a Niles electric jib crane, which with modern shop conveniences enables the operator to put a pair of wheels in place in a very few minutes. Although the facilities were far from being equal to those in an up to date shop, the records made were not unsatisfactory, four carloads of locomotive driving wheels being turned to demonstrate the great power and capacity of this machine.

The best record in point of time cited in the previous article on a pair of 57-in. wheels was an actual cutting time of 42 min. and a total time of 50 min., including the placing and taking out of the wheels. In a time test made at this exhibition, with a pair of wheels of the same size, the wheels were completely finished in 39 min. after being chucked. The actual cutting time was only 25 min., including the shaping of the flanges and threads with a finishing cut, both wheels being turned simultaneously. The wheels were badly worn and had a number of hard spots. The roughing cut was 9-16 in. deep, feed 9-16 in., and the cutting speed 16 ft. per minute. In the roughing cut the motor took as high as 80 hp., which was running it over 50 per cent. above its rating.

It is to be remarked that there are some improvements in this lathe over the lathes of previous construction, these being mainly in an improved form of chucking device and a new design of tool post. The latter was especially of assistance in shortening the time consumed in changing tools.


90" EXTRA HEAVY DRIVING WHEEL CHUCKING LATHE
NILES-BEMENT-POND CO. New York
achine is the property of The Philadelphia & Reading R'y Co.
THE IRON AGE.

A View of the Niles-Bement-Pond Exhibit at the Recent Master Mechanics' Convention at Atlantic City, N. J.

A British Agreement on Angles.—While the plate manufacturers of Scotland and the North of England have had an agreement for more than a year, the manufacturers of each district being bound not to undersell in the other, there has been no agreement on angles. At a meeting of the companies manufacturing angles, held at New Castle on June 15, a provisional arrangement was made governing the angle market. It is stated that there will be no straight advance, but a leveling up of quotations. When the plate syndicate was formed angles were sold at £5 7s. 6d. and ship plates at £5 12s. 6d. at Middlesbrough. To-day's prices are about £1 10s. higher. An effort is also being made to include the Midland manufacturers of angles in the proposed agreement.

A large chimney of reinforced concrete, the first of this form of construction in the United Kingdom, says the London *Engineer*, is to be erected by the Weber Steel Concrete Chimney Company at Northfleet. Its total hight from base of foundation to top will be 247 ft., the diameter of flue 8 ft. 6 in., and the foundation 18 ft. square. The weight of the chimney, including the base, is 868 tons.

Method in Engineering Work.

BY A. D. WILLIAMS, JR.

The word method has been designedly used here instead of the badly overworked word system, which, after

DRAWING INDEX CLASS NO. _____

JONES ENGINEERING CO., COHOES, N.Y.

SERIAL NUMBER	DESCRIPTION	MACHINE MADE FOR

THE IRON AGE

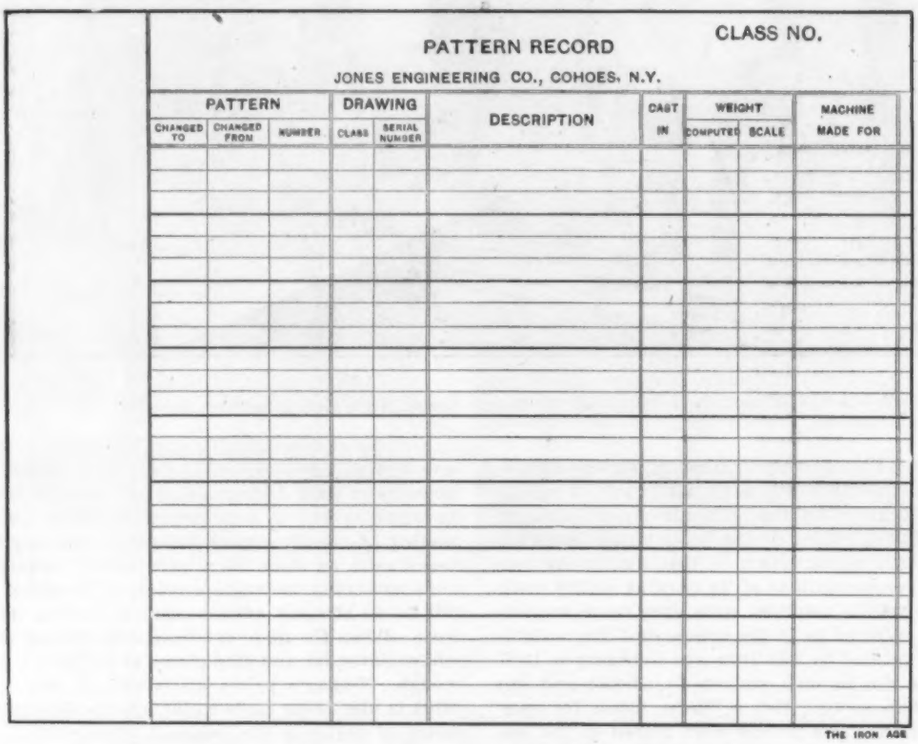
Fig. 1.—Numerical Drawing Index.—Size, 9¾ x 10 In.

all, is synonymous with method, where it means doing and keeping track of work orderly. System in many cases is symbolical with red tape, and its true purpose lost sight of until it becomes more of a clog on the business than a help. The measure of the efficiency of any engineering or manufacturing work is found in the balance sheet, and methods should be adopted which add to the credit side. The principal requisite of any method of handling and keeping track of work is simplicity, but it must also be elastic to permit of future growth and expansion. Clerical work cannot be dispensed with, and it should be placed in experienced hands.

In a factory building any line of machinery a record of all past work is necessary. Repair parts are ordered, often hurriedly by telegraph, and it is desirable to fill such orders with the least delay and error. With patterns, it is necessary to know what they are, where they are, whether the pattern has been changed or altered, and if so whether the original shape has been destroyed. For checking the patterns when taken out and returned to storage it is important to know the number of pieces and core boxes to prevent duplicating any parts, hence a conveniently accessible record of them, arranged by their leading dimensions, should be kept. The drawing index should contain more than the titles, numbers, &c., as many drawings need indexing under several headings, and often many of the pieces should be indexed individually. Often, because of the lack of a good index, it takes less time to design a new piece than it does to find an old one that could be utilized.

The entering and making out of the shop bills for orders and the clerical work required to keep track of rough and finished stock can frequently be better done under the control of the engineering department than elsewhere. The person in charge of this work must know how to read drawings and should preferably have some shop experience. By exercising discretion in this work it is possible to greatly increase the efficiency of the cost statistics, and the cost of labor may be obtained without employing a large clerical force in the shop to record the time occupied on each job. If the cost data is poor, it is usually owing to the manner in which the work is billed into the shop. It is easy to get the total cost of labor and material for a complete machine, or a lot of machines built on the same job number, but totalized costs are of comparatively small value, particularly when numerous items are involved. Lots of small leaks are hidden, and it is impossible to do more than guess at the cost of details. It is difficult to make the shop hand do a lot of bookkeeping on his time card, and errors, accidental and in some cases intentional, are often made in the entry of piece symbols and drawing numbers. Time is also occasionally charged wrong to hide shop mistakes. Another cause of inaccuracy is the size of the cost unit, and the fact that few units are of similar size. It is, therefore, impossible to analyze the costs and compare them on a satisfactory basis with previous orders.

The method of handling the work should begin with the receipt of the inquiry, and furnish a complete history


PATTERN RECORD CLASS NO.

JONES ENGINEERING CO., COHOES, N.Y.

PATTERN		DRAWING			DESCRIPTION	CAST IN	WEIGHT		MACHINE MADE FOR
CHANGED TO	CHANGED FROM	NUMBER	CLASS	SERIAL NUMBER			COMPUTED	SCALE	

THE IRON AGE

Fig. 2.—Pattern Record.—Size, 10 x 14¾ In.

of the machine up to the present, showing whether the machine still stands, as far as the maker is concerned, as it was originally shipped, or has been entirely or partially rebuilt. The details of the system must vary to suit the line of work and the methods suitable for a small concern would differ in detail from those for a large concern, but

CLASS NUMBER

NO. PIECES OF PATTERN

NO. OF CORE BOXES

NO. PIECES OF CORE BOXES

CHANGED FROM

CHANGED TO

JONES ENGINEERING CO., COHOES, N.Y.

FOUNDRY	SENT	RETURNED

THE IRON AGE

Fig. 3.—Pattern Record Card.—Size, 4 x 6 In.

the underlying principles would be the same in both cases. The system should permit of unlimited expansion to meet the growth of the business, and be so arranged that it can be put in operation with the least confusion and inconvenience during the transition period. This last requirement is not a small one, and it is the knowledge of the difficulties met at this period and the attendant and often

THE IRON AGE

Fig. 4.—Index Card.—Size, 3 x 6 In.

there are, however, some purposes for which loose leaf books are better suited, and others for which the regular bound book is well adapted. The latter answers for the entry and preservation of records which follow a serial order in dates and numerical sequence, as shop orders, for which purpose an alphabetical index is required in addition, and can also be used for numerical pattern and drawing indexes, but where drawings and patterns are divided into classes it is difficult to advantageously apportion the space in a bound book, and a loose leaf book is better.

The following method was devised for handling the engineering work, in shop and offices, for a concern building traveling cranes in a wide variety of sizes and types. In this line a great many details can be made on stock orders, while others are special, to suit the particular machine. The method was arranged to co-operate with the shop and accounting department in arriving at accurate costs. Incidental to the regular line of work numerous repair parts were supplied customers, and in such cases prompt shipment was desirable.

The works consisted of a foundry turning out iron and brass castings, machine, erecting, structural, pattern and smiths' shops. Steel castings were procured from outside foundries, as were iron and brass castings occasionally, and the heavier forgings were made outside. The methods were devised to keep the costs in each department separate and to reduce the clerical work in the shop.

Drawings were made in the following sizes: 24 x 36, 18 x 24 and 9 x 12 in. The sheets had border lines on

GIRDERS ____ TONS CAPACITY ____ FT. ____ IN. SPAN

BRIDGE TRAVEL ____ FT. PER MIN. TYPE ____

END CARRIAGE ____ WHEEL BASE ____ FT. ____ IN.

C.L. TO C.L. GIRDERS ____ " LOADS ____ LBS.

TROLLEY TYPE ____ TROLLEY WHEEL BASE ____ FT. ____ IN.

" WEIGHT ____ LBS. " " LOADS ____ LBS.

ESTIMATE NO. ____

DRAWING NO. ____

MACHINE NO. ____

M1 VERTICAL = ____ R = ____ I/R = ____

M2 HORIZONTAL = ____ I = ____ ZC = ____ FC = ____

M3 COMBINED = ____ ZT = ____ FT = ____

END SHEAR = ____ RIVET SPACING ____ RIVETS, SIZE ____

	COMPUTED WEIGHT	SCALE WEIGHT	% VARIATION
RAILS			− +
GIRDERS			− +
CROSS GIRDER			− +
END CARRIAGE			− +
TOTAL			− +

COMPUTED BY ____ DATE ____ CHECKED BY ____ DATE ____

JONES ENGINEERING CO. COHOES, N.Y.

THE IRON AGE

Fig. 5.—Girder Index Card.—Size, 5½ x 8½ In.

expensive losses of time, which deter many concerns from changing, though they recognize the inadequacy of their existing methods.

The advantages of card systems for indexing are well known, and while it is practicable to use one for preserving all sorts of records, due to the variety of ways in which the matter may be arranged and cross indexed, three sides ⅛ and ½ in. from their edges and at the left hand end ⅛ and 1½ in. from the edge, the blue prints being trimmed to the outer border line. The 9 x 12 in. sheets were used for tables, data, shop and office standards, and occasionally for small details, four of them being traced on an 18 x 24 in. sheet, which was the smallest filing and numbering unit used for drawings.

The sheet number was put on each, followed by the letters A, B, C or D. The sheet number of the drawing was arranged to show the class of work to which the drawing referred and the serial number of the drawing in the class, the first two numerals in the number denoting its class. The numbers from 1 to 1000 were assigned to 24 x 36 in. sheets, and from 1001 up to 18 x 24 in. sheets. Comparatively few of the first were used, except for the structural work, being confined to assembly drawings. In addition to the above, which refers entirely to the drawings used for construction, there were a series of 8 x 13 in. drawings, three of which were traced on an 18 x 24 in. sheet, arranged so that the wide margin came on the end of the 8 x 13 in. sheet. These sheets were used for proposals, &c., their size being such that they could be bound up with the specifications sent out, &c., for which legal cap paper was used. Each 8 x 13 in. sheet bore a serial number and a class number, the serial numbers running from 1 to 999; when it was necessary to use an 18 x 24 in. sheet for this work it bore a serial number over 1000. A separate negative was made from each 8 x 13 in. sheet, and from this white prints were made. Some of the dimensions and a portion of the title were left blank, and filled in with blue ink on the white prints to suit the proposal in hand.

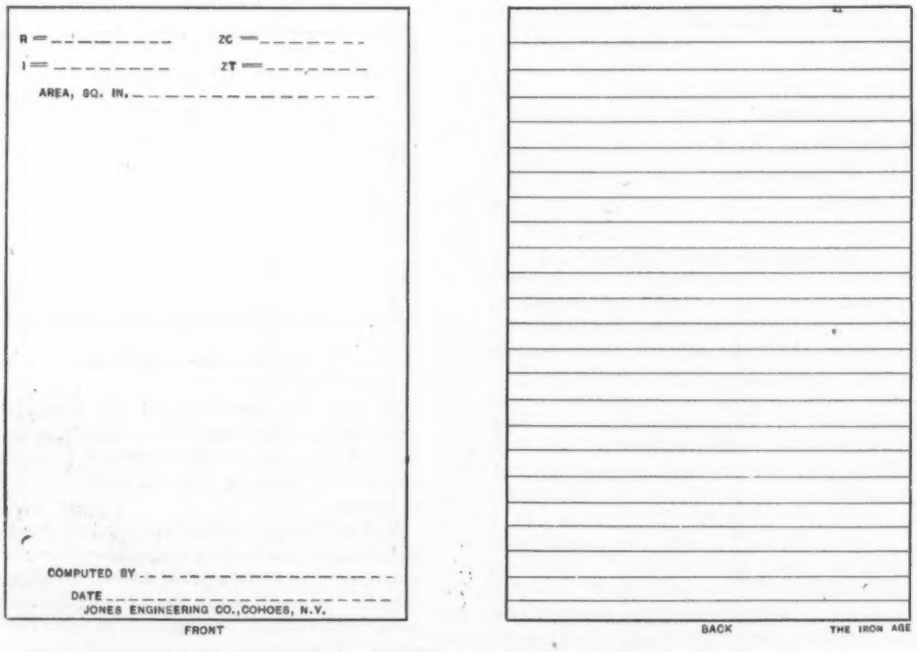


Fig. 6.—Both Sides of the Girder Section Index Card.—Size, 4 x 6 In.

The specifications for standard machines were printed in facsimile typewriter type, blanks being left which were filled in to suit each proposal. For special types of machines the specifications were written on the typewriter, following closely the form used for regular machines. A carbon copy of the proposal and specifications, with duplicates of the white prints attached, was filed.

A numerical index of the drawings arranged by classes was kept in a loose leaf book on forms, Fig. 1, each sheet having room for 25 or 50 drawings. A classified index was also used, arranged alphabetically, in a manner which will be gone into later.

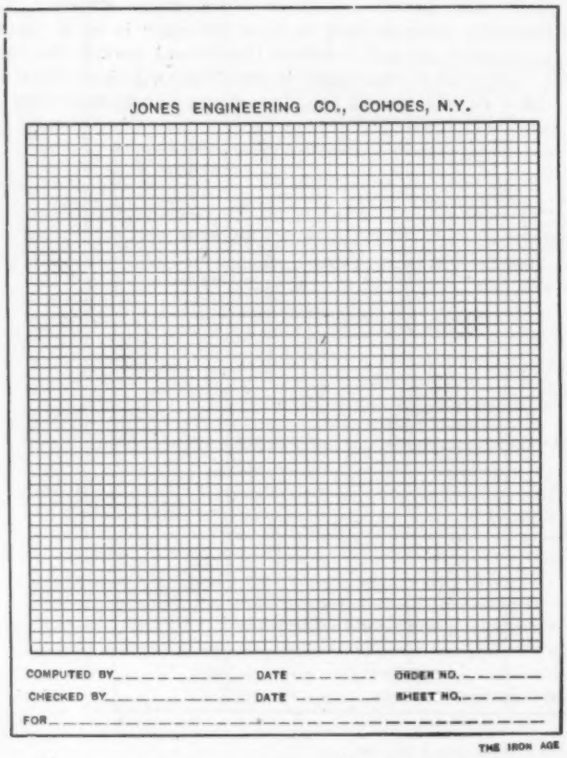


Fig. 7.—Computation or Sketch Sheet.—Size, 8½ x 11 In.

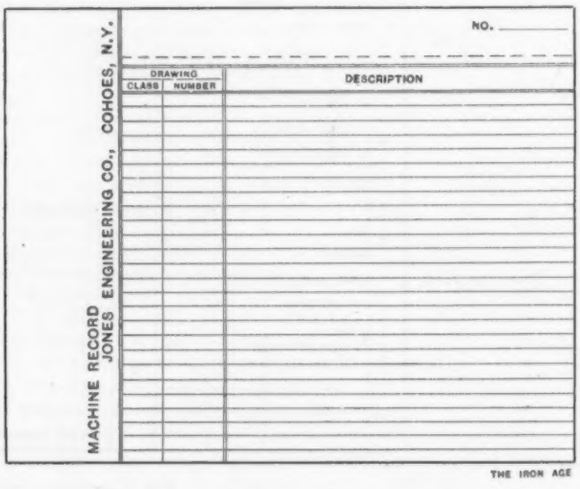


Fig. 8.—Machine Record.—Size, 8 x 10 In.

Girders and other structural drawings too large to go on the 18 x 24 in. sheets were made on 24 x 36 in. sheets, 1 in. to the foot being the scale adopted for details. One-half of the girder was shown, and if one sheet was not enough two or more were used, and a small scale erection diagram of the complete girder was placed

on each sheet, references being given to the other drawings required. When built up steel end carriages were used they were detailed on the girder drawing.

In making shop details as far as possible 18 x 24 in. sheets were used. Each machine was divided into a number of elements, each piece being shown by itself, with

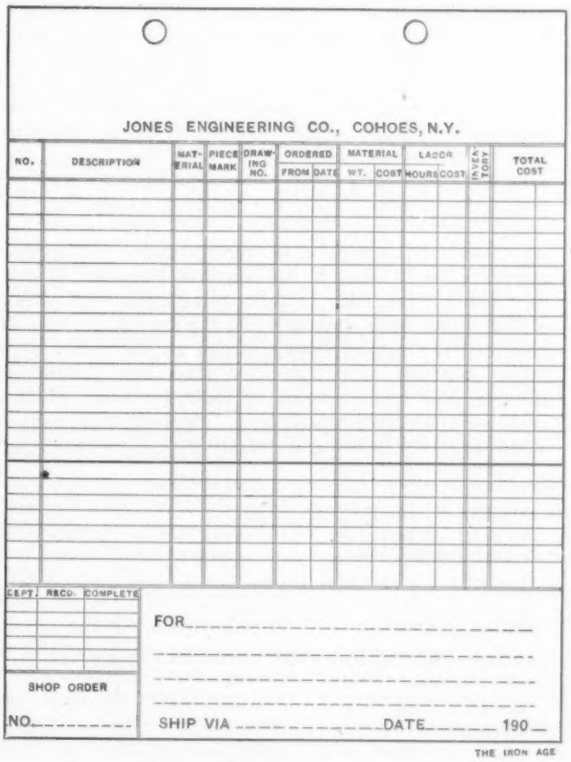


Fig. 9.—Shop Bill.—Size, 8½ x 11 In.

the exception of caps for bearings, &c., and assembly drawings were made for some of the units. At times these assembly drawings could be used in place of details of the individual pieces, saving in drawing office work. A complete bill of material or a reference list of the drawings upon which the details appear was placed upon each drawing, the first being made out in the same form as it is to appear on the shop bills. Immediately above the title of the drawing was placed "Shop Order No.," followed by a blank to be filled in on the blue print.

Detail drawings, as far as possible, were made on a scale of 6 in. to the foot and in some cases full size, as

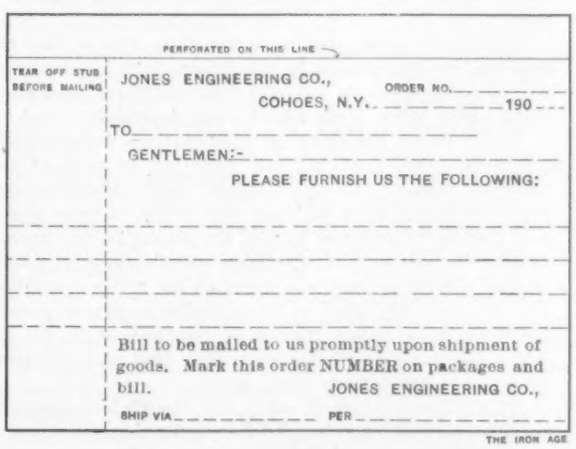


Fig. 10.—Order Blank.—Size, 6⅛ x 8½ In.

more rapid work could be done in this way. No effort was made to crowd a sheet, all pieces being kept about 2 in. from a margin and a space of about 3 in. being left between views. All information was given as to the kind of finish required, fits to be made, &c., if jigs or fixtures were to be used, their index numbers and the numbers of the machines they were fitted to. Every piece on a drawing was given a mark, or, if a casting, a pattern number. When a pattern made according to a previous drawing was used without alteration the words "old pattern" followed the number. When the pattern was to be altered it was given a new number, followed by the note, "old pattern, No. —, altered." Bolts, studs and

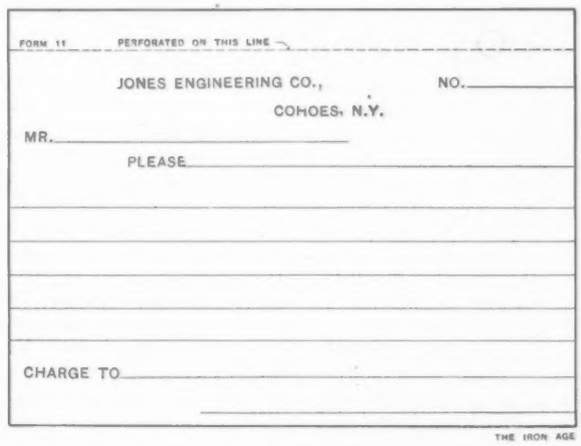


Fig. 11.—Internal Order Blank.—Size, 6⅛ x 8½ In.

screws were made to standard sizes, or commercial sizes were used. These items were called for on the drawing and in the bill of material, but were not shown on the drawings unless necessary. They were designated by their diameters and lengths and given piece numbers or marks. When any change was made in a piece a new drawing of it was made and a note placed upon the old drawing showing the number of the last machine upon

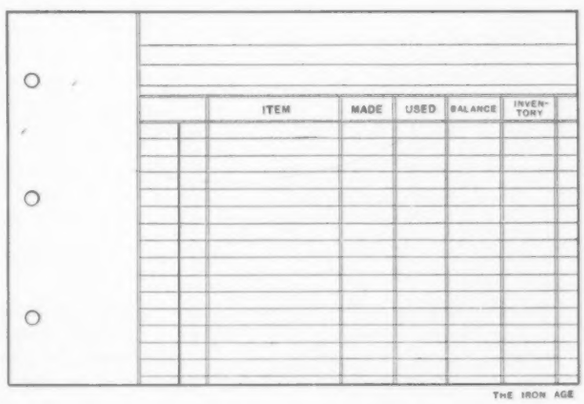


Fig. 12.—Stock Ledger.—Size, 5½ x 8½ In.

which the piece was used, as there shown, and a note on the new drawing gave the number of the first machine upon which the piece was used in its altered condition. Notes were also placed on each drawing referring to the other and giving the date upon which the change was made.

Each pattern number was composed of the class num-

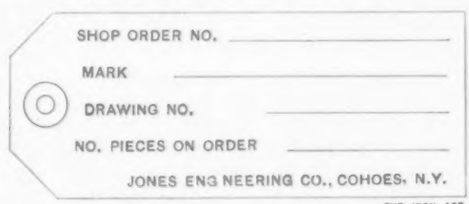


Fig. 13.—Shop Tag.—Size, 2 x 5 In.

ber and the serial number in the class, and was written, either in fractional form, with the class number for the numerator or with the two numbers separated by a dash. Since the class number always contained two numerals it made little difference how it was written. A numerical record of all patterns was kept in a loose leaf book, of which Fig. 2 shows a specimen page. Room was

given for 25 entries on each page, or 50 per sheet, and a blank tabbed index sheet separated the classes.

In taking out pattern numbers a drawing number was first assigned and entered in pencil in the drawing record, with the initials of the draftsman, then the pattern numbers were assigned and entered with the drawing numbers in the pattern record. After the drawing was completed these entries were made in ink and the pencil marks erased. At intervals these books were inspected to see if any assigned numbers had not been inked in and why. Any change or alteration of a pattern was given a new number, and the old pattern number was entered in the column headed, "pattern changed from." When a new pattern was made this column remained blank. The column headed "pattern changed to" was only used when the alterations of a pattern were so radical that its previous identity was lost. Then the new pattern number was entered in this column opposite the old number and the old number was entered in the column "changed from" opposite the new number. Two columns were used to record the weight of the casting made from the pattern, one for the estimated or computed weight, the other for the scale weight, which was filled in from the report of the receiving clerk. Where possible the average of a number of castings was used. A comparison of these two columns served as a check on

An alphabetical index of drawing and patterns was maintained, this being liberally cross indexed and classified by tabbed guide cards. Patterns for cast gears were indexed by their pitch, face and number of teeth, and cut gears by the same, and also their outside diameter and face. The gear patterns were simply a rim with arms or a web, the diameter of the hub and its length and the diameter of the core were stated in ordering the castings. The patterns were made to standard proportions in regard to their arms and the diameter and thickness of the center. When hubs too large for the standard center had to be used these hubs were given pattern numbers and index cards were made out for them and filed in back of the card for the gear they fitted. Standard hubs and core prints were kept in stock and were sent to the foundry with the patterns as castings were ordered and a pencil note of them was made on the card, which was erased when they were returned. Bushings or sleeves were indexed by the outside diameter to which they would finish, their patterns being made with a length of four times their diameter and the size of the core and length of the casting were specified on the order. Track wheel patterns were made for steel and chilled iron castings and were indexed by their diameter, width of tread and designed wheel load. Bearing caps were indexed by their inside and outside diameters and length,

COMPARISON OF COSTS SHOP ORDER NO._____

JONES ENGINEERING CO., COHOES, N.Y.

MACHINE _____ TOTAL COST _____

FOR _____ PRICE QUOTED _____

DATE		MATERIAL	LABOR	BURDEN	TOTAL	REMARKS
	ACTUAL					
	ESTIMATED					
	OVER ESTIMATE					
	UNDER ESTIMATE					
	PREVIOUS COSTS					
	ORDER NO.					
	ORDER NO.					
	ORDER NO.					

THE IRON AGE

Fig. 14.—Cost Comparison Sheet.—Size, 5½ x 11½ In.

probable errors made in estimating weights and in enabling closer results to be attained. In the column headed "machine made for" was entered the serial number of the first machine on which that particular casting was used. A brief description of the pattern and the material of the casting were entered in the appropriate columns.

A 4 x 6 in. card, Fig. 3, was used for keeping track of patterns. These were filed numerically by classes in an index case, one drawer holding the cards of patterns at outside foundries, another those in the firm's foundry, while the balance held the cards of patterns in the storehouse. The entries on these cards gave sufficient information for the storekeeper to check up a pattern before sending it out and when it was returned. The name of the foundry and the date it was sent and returned were entered on the card, making it easy to fix the responsibility for any missing or broken pieces.

For convenience conventional colors were used on the patterns, blue for those to be cast in steel, black for cast iron, and orange shellac for brass. Metal patterns were marked by stamping the name of the material upon them. When patterns made for iron castings were lagged up for steel castings a new pattern number was assigned, in the same manner as for any other alteration. In such cases a new drawing was not made, but the new number was entered on the drawing followed by the note "Old pattern No. — lagged up for steel casting for machine No. —." Core prints and core boxes were red, and all cores were outlined in this color, so that a split pattern showed a cross section of the casting taken on the line at which it was parted.

the number of studs or bolts and their size being given. Hangers were indexed by the inside diameter of box, the distance from center of shaft to the top and bottom of the base. The number of holding down bolts, their size and the size of the base of the casting were also given.

The index cards used were 3 x 6 in., Fig. 4, and the drawing number placed in the upper right hand corner. As the index grew its subjects were redivided, and additional cross index cards added when desirable.

Fig. 7 shows the sheet for computations and sketches. These were 8½ x 11 in., and were put in pads of one hundred sheets. All calculations, study sketches, &c., pertinent to the work in hand were made on these sheets and filed in a loose leaf binder, the sheets being punched to suit. A supply of cheap yellow manila paper, 5 x 8 in. in size, put up in pads was supplied for rough scribbling, &c. When it happened to be desirable to preserve work made on these sheets they were punched to fit the file and a regular computation sheet was used as a tab sheet to separate them from other work.

In the preparation of estimates, the girders presented the greatest difficulty, being different for nearly every case. It was therefore necessary to compute a section and then calculate its weight, and the following method was adopted to avoid duplication of the work: Two card indexes were used, in one a 5½ x 8½ in. card. Fig. 5 was used, which was filled out for all sections computed. These were filled by the rated capacity of the crane in tons and the span of the girders. A typical cross section of the girder was drawn on the back of the card, and if a built-up steel truck beam was used its cross section was

also shown. In the other index, 6 x 4 in. cards were used, of which Fig. 6 shows the front and back. A typical cross section of the girder was drawn on the front of the card and a minute made of the properties of the section. On the back of the card was entered the hook loads and spans for which the section was suited. These cards were filed by the radius of gyration of the section and its modulus in compression. After a girder had been built its scale weight was entered on the card and the variation above or below the computed weight was noted, the percentage being computed with a slide rule.

Fig. 8 illustrates a page of a loose leaf book which was called the "Machine Record." Each machine built was given a serial number and a cast iron name plate bearing this number and the name and address of the builder, with the legend, "Please refer to the above number in ordering parts of this machine," was attached to the machine before it was shipped. The "Machine Record" was a numerical index of all machines built, giving the name of the purchaser, the capacity and a complete list of all of the drawings used in building the machine, the field and armature numbers of the motors and the serial number of the trolley. This record was brought up to date whenever the machine was partially or entirely rebuilt. Orders for trolleys sold without bridges were recorded in the same manner. A card index was also kept of all customers, giving the serial numbers and capacities of the machines purchased. Each trolley was given a number for record purposes, the first three numerals of which gave the hook load of the machine in thousands of pounds; thus, trolley No. 01056 was a 5-ton trolley, serial number 56. The particular use of these numbers was in keeping track of trolleys built on stock orders. A "Machine Record" sheet was made out for each trolley and when these trolleys were assigned to cranes these sheets were filed in the binder under the crane number.

A large number of photographic negatives were numbered and filed in racks on edge, a card index being used to locate them, comprising a numerical index, an index by the hook loads of the trolleys or cranes, an alphabetical index of the names of the users and the locations where the photographs had been taken. A stock of prints from these negatives was kept in numbered folders in a filing case. As these prints were used continually, to arrange for replenishing the supply the following method was devised: A print was conspicuously marked with the number of prints to be made at a time, and this was filed with the other prints, placing in back of it the desired minimum stock. Whenever this print was pulled out it was placed in the blue print order tray. Every time prints were made from a negative the date was stamped on this print, which thus showed how often it went to the print room. When dates occurred at intervals of less than two weeks, the number of prints to be made at a time was increased, unless inspection of the stock showed that the order print had been misplaced. When the latest date on the print was a year old or more, it was referred to the chief draftsman for instructions. This procedure was also followed in the case of the white prints used for proposals, &c.

The organization embraced accounting department, engineering department, pattern shop, foundry, machine shop, electrical shop, structural shop, smith's shop and stores department, each, as far as possible, independent of the other departments; that is, no work was done or material delivered to other departments except upon orders from the office. It early developed that there was a certain lack of harmony and co-operation between the various departments, which was undesirable. To get the department heads in better touch with each other they were brought together informally at intervals by a noon day lunch at which each was expected to be present. Later this became a daily lunch, and while attendance was not compulsory, each man was expected to be on hand three or four times a week. At the outset a little restraint existed, but this rapidly vanished and many valuable suggestions were made. Occasionally notes were made of points which it was desired to bring up at these lunches, and these were distributed so that those interested could prepare to discuss them.

The stores department had charge of the pattern warehouse, the stock of raw material, rough, finished and partially finished stock, &c. Patterns were repaired before being sent to the foundry, one pattern maker being detailed for this work; such work was, if possible, charged to the order number for which the castings were to be used. The authority for such work was the carbon copy of the order for the castings. The endeavor was made to carry a stock of all the castings in regular use, the number depending upon the demand and the size of the casting. This stock often proved valuable on rush repair orders, spoiled castings and other emergencies. Stock work in any department was used as a filler in, precedence being given to repair orders and regular work for shipping orders. Regular shop order numbers were given all stock and other work. A considerable stock of regular structural shapes used was maintained. Angles, beams, channels and edge rolled plates were purchased in long lengths, such as could be loaded on two cars, and in making up mill orders, if possible, a sufficient quantity was specified to load two cars. Sheared and edge rolled plates were carried in the widths, thicknesses and lengths most in demand. In designing girder details it was endeavored to utilize stock material to the fullest extent, and thereby avoid mill orders for small quantities and prompt shipment.

Fig. 12 shows a page of the stock record book. These were loose leaf books, one being used for "Finished Stock," one for "Steel Stock" and another for "Castings Stock." One sheet was used for each article, the description being entered at the top of the page. The entries gave the date and order number on which the material was made or purchased, followed by the quantity in the column headed "Made." As this material was used the date and order number were entered, followed by the quantity in the column headed "Used," and the balance was entered in the third column. A fourth column headed "Inventory" was used for the entry of the quantity as determined at any time by actual count, either at the regular inventory period or at other times. The entry in this column was a check on the column headed "Balance," and any discrepancy was inquired into at once. These books were a so-called perpetual inventory of the stock on hand, but were continually checked by actual count of the items. For "Finished Stock" the description of the article gave the drawing numbers on which the piece was shown. For the "Steel Stock" the book was arranged to classify the material as, cold rolled, rounds, flats, angles, beams, channels, plates, &c., one sheet being used for full length pieces and as many sheets as necessary to list the short pieces. The book for castings was arranged by the class numbers of the patterns and their serial numbers, the page being headed by the name of the piece and a list of the drawings upon which it was shown.

When material was got out for a shop order it was marked or tagged with the order number, piece number, or mark, and the drawing number and a note of the number of pieces to be finished on the order. Fig. 13 shows the tag, three colors being used, a plain manilla for stock work, green tags for work being got out for regular shipment orders and red for rush shipment orders. When it was impossible to use tags the necessary information was marked on the piece with paint, white, red or green, as the case required. Small pieces were handled in quantities in tote boxes, and the tag was fastened to the handle of the box.

Fig. 10 shows the order blank for all orders to outside parties. These were put up in pads of 100 forms, with white duplicate and manilla triplicate sheets. The form and duplicate sheet were perforated for removal from the pad, and the third sheet was retained as a copy of the order. All of the sheets were numbered by a stamp. Fig. 11 shows the internal order form. These were put up in pads similar to those for Fig. 10, the second sheet in this case being of manilla paper and third of white paper. This form was printed with dark blue ink and the sheets were numbered. For notes and interdepartmental requests Fig. 11 was printed with black ink and put up in pads with duplicates which were retained in the pad. These blanks were numbered and put up 100 in a pad. When a pad was issued its recipient

gave a receipt for it on the first form in the pad, which was then filed. This file was of considerable use in locating the possessor of any particular pad in those cases where the signature or initials had been omitted and made the holders careful in their use.

Fig. 9 illustrates the shop order blank; the upper portion of the sheet, above the ruling, was reinforced and punched to fit arch files of the Shannon type. A number of these files were used in the various shop offices to classify the orders, whether for stock, rush repairs, &c., the stock orders, for instance, being also further classified according to the capacity of the crane or trolley, or the machine upon which the part was to be used. These files were hung on boards under label holders in which suitable labels could be placed. The blanks were arranged for easy reference in these files and the binders in which they were finally placed, when upon completion of the order they were returned to the office. For this reason the heading was placed at the bottom of the sheet. The first four columns of this form are the same as the bills of material which appear on the drawings and the entries were simply copied from the drawing. The drawing number was placed in the fifth column. No entries were made below the heavy line, this portion of the sheet being reserved for the use of the cost clerk, and for the purpose of noting any addition to the order, such as a casting turning out bad, or being spoiled in the shop. The columns headed "Ordered," "Material," "Labor" and "Total Cost" are self-explanatory. The column headed "Inventory" was for checking off the items when an inventory was taken, and made it very easy to see whether the order had been overlooked or not. It also provided a definite place for this check and saved the making of pencil entries in the other columns where they were likely to be overlooked.

A large number of the parts were made on stock orders, the quantity of any item made being so proportioned that a certain amount was available to supply repair orders, in addition to the regular stock requirements. A policy was also adopted of dividing the stock orders for a machine so that each unit of the machine was made on a separate order. This required the entry of a large number of orders, sometimes one for each piece to be made. Assembling orders were also used for such of the units as could be placed in finished stores in this condition with advantage. In those cases where there was a call for repair parts of these minor units, provision was made so that it was unnecessary to rob completed units to secure parts, except in cases of extreme emergency.

The following order was observed in entering matrial on the shop bills:

Drawings.
Patterns.
Castings.
Forgings and shafting.
Structural steel.
Bolts, nuts, rivets, studs, &c.
Miscellaneous material.

The following procedure was used in handling the order for a travelling crane: A serial number was assigned the machine, and this number followed by a letter was used for the order numbers for getting the machine out, for instance:

891 A. Girders, rails, &c.
891 B. Operator's cab and platforms.
891 C. Bridge traveling mechanism.
891 D. Erecting floor work, except on trolley.
891 E. Trolley assembling order (machine shop order if trolley was special).
891 F. Motors and wiring.
891 G. Shop testing and inspection.
891 H. Taking down and loading for shipment.
891 K. Unloading and erecting on runway.
891 L. Field test.
891 M. Instruction of users, operator, &c.
891 N. Field inspection.

The last order, 891 N, covered all the hunting for the troubles reported by the user. Some of these charges were properly billed to the user, but occasionally it was impolitic to make any charge for such services, though it was desirable to keep track of the matter.

The work of getting out the patterns was charged to the appropriate order numbers, as were all of the drawings made for a particular machine. Where an entirely new trolley was got up it was customary to enter an order number for the drawings and one for the patterns. A shop bill was made out for each order number and on it were entered the items taken off from the drawings. When drawings were required the order was placed on the suspense file until they were finished and a memorandum was given the chief draftsman concerning the order. Upon receiving the drawings, if patterns were required, they were ordered on form, Fig. 11, the original and duplicate going to the pattern maker. When the pattern was finished the fact was noted on the duplicate of the order, which was then returned to the drawing office and a draftsman, preferably one who had designed or checked the piece, was sent out to the pattern shop to look it over. Upon receiving the report that the pattern was correct, indorsed on the duplicate, castings were ordered, form No. 11 being used, the original going to the foundry and the duplicate to the storekeeper. If the pattern went to an outside foundry form Fig. 10 was used in making out the order.

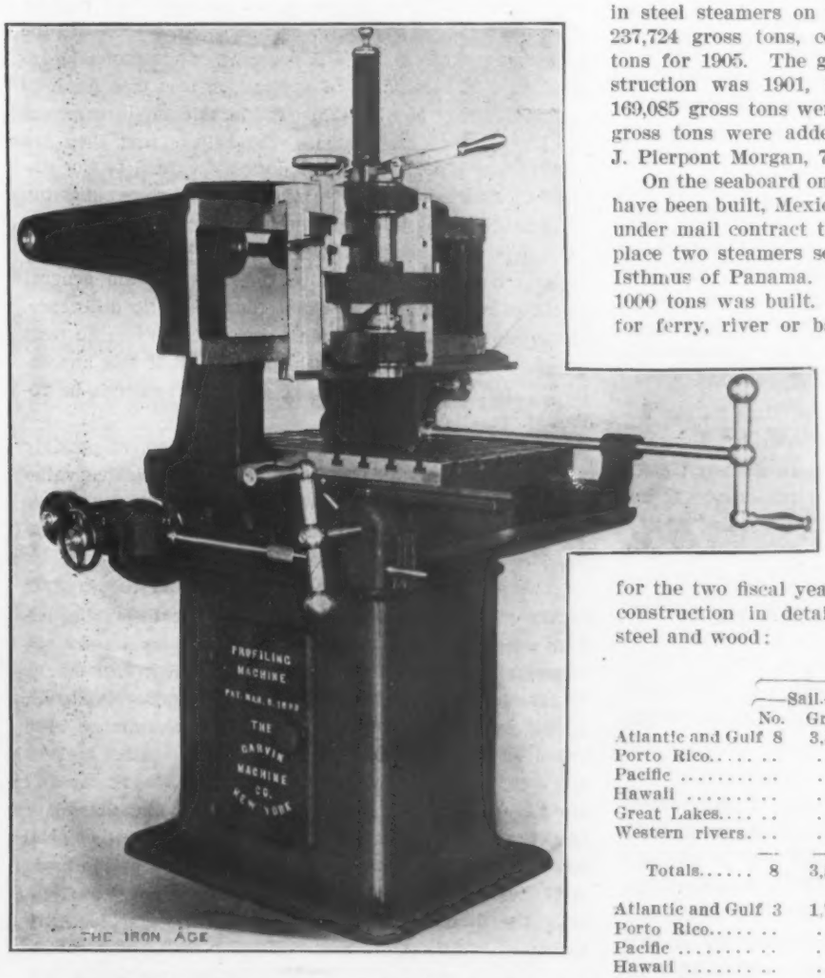
Before the bills were sent into the shop they were gone over in connection with the stock ledgers, and all items which could be supplied from stock were noted, charged off in the ledger to the order number, and the order number on which the piece had been made was noted on the shop bill. Memorandums were then made out to the storekeeper directing him to tag such material for the shop order, form Fig. 11 in duplicate being used for the purpose. This form was also used for requisitioning any particular material upon which it was desired to secure bids before placing the orders. When all of the material had been ordered or requisitioned the shop bills were sent to the various departments concerned and were placed upon their files. Separate sheets were used for each department. Thus when forgings were required which had to be machined, a bill was made out for the smith's shop and a memorandum bill was sent to the machine shop stating that the detail bill had gone to the smith's shop. When the forgings were completed the date was noted on the bill, which was then sent to the machine shop, where the date of its receipt was noted. When the machine work was completed the date was marked on the bill, which was then sent with the material to the storekeeper, who marked the date he received the bill upon it and turned it in to the office. If the material was to be shipped it was packed and sent off, and the date was noted on the order before it was sent to the office. The same procedure was followed in regard to orders in which other departments were interested. In the office the charges for labor and material were entered on the order and the shop burden added, making up the shop cost of the article. The completed costs were then entered on the cost comparison sheet, Fig. 14, together with the estimated cost, the price quoted, and if possible the cost of the previous work as nearly identical as possible with the case in hand. A card index was used for filing cost data, for each individual piece or for such units as the costs were obtained for, thoroughly subdivided by the use of tabbed guide cards. A portion of this index was arranged alphabetically, and other parts by drawing numbers and piece marks. Cross indexing was done where advantageous, as, for instance, a piece appearing on several drawings was indexed under each number with references to the others.

The Lake Superior Wood Alcohol Industry.—Makers of wood alcohol in the Northwest, all of them distilling it as a by-product from blast furnace charcoal manufacture, regard the recent free industrial alcohol law as a detriment and are inclined to run under check. Some, however, think this is merely a phase of the transition period, and that the ultimate effect of the bill will be to enlarge their market. Chief distillers of wood alcohol in this region are the Cleveland-Cliffs Iron Company, with charcoal furnaces at Marquette and Gladstone, both large plants; the Lake Superior Company, with furnaces at the Canadian Sault; Berry Bros., of Detroit, with a furnace at Newberry; the Elk Rapids Iron Company, and some others. But so far as has been observed up to this time none of the manufacturers have seen fit actually to reduce operations or decrease product.

The Garvin Profiler.

For the general surfacing of castings, such as open frames and side frames, base castings for light machines, such as cash registers, &c., feed boxes and chain gear boxes for machine tools, automobiles, &c., the vertical spindle type of milling machine shown is particularly adapted. The maker is the Garvin Machine Company, New York City.

A broad table with numerous T-slots gives every facility for holding and clamping work and fixtures, and power feed with reverse and automatic trip is provided. The spindle is back geared and has quick reverse by rack and pinion. It is balanced and is fitted with a lever vertical movement and an adjustable micrometer lock-notch stop. Adjustable stops are provided for both the table and cross slide. The movements of the table and cross slide are controlled by large ball handles, conveniently placed for simultaneous operation. Thus the spindle is quickly brought over all parts of an irregular shaped casting, and in addition to the main surface cut, bosses can be spotted off at different hights, ledges for bearing caps, &c., milled to gauge and in exact position, so that the machining of the piece is accomplished quickly at one setting and without straining the casting by using heavy gang cutters. Numbers of small pieces all alike can be set in rows on the table and all finished off at one passage with absolute uniformity.



A Vertical Spindle Milling or Profiling Machine, Built by the Garvin Machine Company, New York.

Twelve changes of feed and three changes of speed are provided. The spindle has a No. 10 B. & S. taper hole and the machine will take in 20 in. between the uprights, with 30 in. table feed and 5½ in. clear hight. Changes in hight and width are easily arranged for.

A steady demand for railroad materials in Peru is predicted for years to come, as the Government proposes to construct lines in several directions.

Shipbuilding in the Fiscal Year 1906.

WASHINGTON, D. C., July 10, 1906.—The Commissioner of Navigation has compiled a statement showing the output of the American shipbuilding industry for the fiscal year ended June 30, 1906, as compared with 1905. While the statement shows an increase, this is due solely to steel construction on the Great Lakes and the exhibit for the seaboard yards is far from flattering. In the fiscal year 1906 1463 merchant vessels were built and officially numbered by the Bureau of Navigation, measuring 421,744 gross registered tons, compared with 1301 vessels of 326,213 gross tons for the fiscal year 1905. Of the new tonnage, 384 vessels of 73,399 gross tons were unrigged barges and canal boats, as compared with 247 of 63,149 gross tons in 1905. The year's increase has been entirely in steel steamers on the Great Lakes, numbering 52 of 237,724 gross tons, compared with 29 of 102,497 gross tons for 1905. The greatest previous year in Lake construction was 1901, when 175 vessels of all types of 169,085 gross tons were built. Three steamers over 7000 gross tons were added this year to the lake fleet, the J. Pierpont Morgan, 7161 gross tons, being the largest.

On the seaboard only two steamers for the foreign trade have been built, Mexico and Merida, 6207 gross tons each, under mail contract to Cuba and Mexico and built to replace two steamers sold to the Government's line to the Isthmus of Panama. Only one other ocean steamer over 1000 tons was built. The remaining large steamers are for ferry, river or bay service, including four for New York's city owned ferry system. Only five schooners over 1000 tons were built, compared with 14 in the fiscal year 1905. Three years have now elapsed since a square rigged vessel was built in the United States.

The following is a summary of the shipbuilding, exclusive of unrigged barges and canal boats, for the two fiscal years 1905 and 1906, showing the steel construction in detail and its relation to the total of steel and wood:

	1905. Steel.					
	Sail.		Steam.		Total.	
	No.	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf	8	3,506	52	43,221	666	93,139
Porto Rico	..	....	..	....	2	15
Pacific	..	....	1	347	134	11,179
Hawaii	..	....	..	....	...	....
Great Lakes	..	....	52	237,724	123	239,448
Western rivers	..	....	4	449	154	4,564
Totals	8	3,506	109	281,741	1,079	348,345
	1906.					
Atlantic and Gulf	3	1,773	42	56,777	649	139,402
Porto Rico	..	....	..	....	5	47
Pacific	..	....	..	....	145	14,218
Hawaii	..	....	..	....	...	....
Great Lakes	..	....	29	102,497	85	103,550
Western rivers	..	....	2	81	170	5,847
Totals	3	1,773	73	159,355	1,054	263,064

From the above figures it would appear that the construction on the Atlantic, Pacific and Gulf coasts in 1906 aggregated 800 vessels, with a total of 104,318 tons, as compared with 794 vessels, with a total of 153,620 tons, in 1905. The steel construction on the Atlantic, Pacific and Gulf coasts in 1906 aggregated only 43,568 tons, as compared with 56,779 tons in 1905. W. L. C.

The fiscal year which ended on June 30 showed unusual prosperity for the United States Government. One year ago there was a deficit of $24,000,000, but the financial statement issued last week showed a surplus of $27,000,000 for the past fiscal year. The customs and internal revenue receipts were larger than in any year since the Government was founded, being $302,000,000, as against less than $230,000,000 in the preceding fiscal year. The internal revenue receipts increased from $235,000,000 to $250,000,000. The total receipts for the year were about $597,000,000 and the expenditures $570,000,000.

THE IRON AGE

1855—1906.

New York, Thursday, July 12, 1906.

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The Production and Use of Rolled Iron.

The statement in the American Iron and Steel Association's statistical report for 1905, extracts from which were printed in these columns last week, that more than 2,000,000 gross tons of iron products were rolled in the United States in that year, is probably a surprise to all but those intimately associated with the iron branch of the industry. It has been the habit to regard the production of wrought iron as a decadent industry, and the absence, until the past two years, of statistics bearing on production has allowed that belief to go unchallenged. The only statistical information available has been the summary of puddling furnaces printed in each edition of the association's directory, and these summaries have indicated an almost steady decline. The largest number of puddling furnaces recorded was in 1884, when 5205 were shown. In the immediately following years the number slightly decreased, but advanced to the subsequent maximum of 5120 in January, 1892. Since then each succeeding edition of the Directory has shown a decrease, down to 3161 in June, 1904.

The statistics of rolled iron are not the statistics of the production of the puddling furnace. In the old days, when the outcome of scrap was limited, wrought iron was produced chiefly through the refining of forge pig in the puddling furnace, with the addition of such scrap as was available or could conveniently be used. Nowadays the case is different. In 1904 there was produced 550,836 gross tons of forge pig iron and 1,760,084 gross tons of rolled iron; in 1905, 727,817 tons of forge pig was produced, and 2,059,990 tons of rolled iron. A considerable part of the forge pig iron went to foundries, particularly pipe foundries. The production of forge iron in 1904 and 1905 was less than in either of the two preceding years, while the production of rolled iron was in all probability greater. Statistics of forge pig production are lacking prior to 1902, and of rolled iron from 1891 to 1903 inclusive.

Doubtless considerably less than half of the 2,059,990 gross tons of rolled iron produced in 1905 passed through the puddling furnace, the greater part being made in scrapping and busheling furnaces, from heating piles on boards and from heating fagots. These three processes do not involve a refining operation and the furnaces used for such purposes are not summed up in the Directory, which shows only the decadence of the puddling process.

In 1880 the production of rolled iron in the United States first passed the 2,000,000-ton mark. With the exception of the years 1884 and 1885 it remained above this mark through the time when the statistics ceased in 1890, showing a production for that year of 2,522,660 gross tons. In subsequent years it probably declined to the neighborhood of 1,000,000 tons, reviving in 1905 to a figure comparable with the production in earlier times, although, of course, it cuts a much smaller figure beside the heavy production of rolled steel, which in 1905 reached 14,780,025 gross tons. When the statistics of rolled steel were first collected, in 1886, the production had already passed that of rolled iron, probably within a very few years, the cause being the supplanting of steel for iron in the rolling of rails. Steel rails passed iron rails in 1877.

The production of bar iron in 1905, 1,322,439 gross tons, constituted 64.2 per cent. of the total rolled iron, while the production of iron skelp, 452,797 tons, constituted 22 per cent. These are the proportions which would naturally be expected. It is perhaps a trifle startling, however, to find that the bar iron production constituted 36.8 per cent. of the total merchant bar production and that the iron skelp production constituted 31.5 per cent. of the total skelp production. Inasmuch as the larger sizes of wrought pipe are made from steel skelp and the large pipe eats up tonnage very rapidly the proportion of iron entering into small merchant pipe is probably quite above 31.5 per cent. It is probable, indeed, that in some lines of application iron pipe predominates. It may be also that considerable small merchant steel pipe reaches consumers who believe that they are getting iron pipe. This error does not extend to the statistics. As Professor Howe stated at the recent meeting at Atlantic City of the American Society for Testing Materials, the popular belief is strongly that iron corrodes much less rapidly than steel, while the general result of scientific tests is that there is little difference. He urges that study be made to see if the scientific tests exactly duplicate conditions in practice, that this anomaly between popular belief and scientific research be removed.

The use of bar iron rather than steel cannot possibly rest so much on misapprehension of the relative value of the materials. Old prejudices may survive, but there is no element of deceit in tests to which bars are subjected.

The swing from rolled iron made from the product of the puddling furnace to rolled iron made by busheling, scrapping, fagoting and heating piles on boards suggests that the survival of iron, so-called, although it is not strictly iron at all, rests on a commercial basis. A few years ago the scrap markets of the country were bared by the demand of basic open hearth steel makers for scrap; to-day this demand is light. Heavy melting stock has depreciated, relative to pig iron, and there is a tendency to give back to the iron mill much of the scrap which was taken from it in the earlier days of the basic open hearth furnace before various processes, particularly the direct metal process, had made the necessity for scrap less dictatorial.

Our Machine Tool Prices Abroad.

Foreign dealers in American machine tools have for some time been urging manufacturers here to fix a stable price. They would like one which does not fluctuate with the demand in this country, and, in fact, one that would remain stationary in the face of changing conditions abroad. Since the recent advance in prices on all classes of American machine tools the European dealers have expressed themselves freely in this respect. They have written to their principals that foreign buyers resent advances with a vehemence which is out of proportion to the money difference involved. If a buyer purchases a tool, say for $1000, and if when he wishes another like it he has to pay $1050, he feels it keenly, whereas if he had paid $1050 on both occasions he would have considered it a straight matter of business. Consequently the European dealer would much prefer an average fixed price, one which would give a fair profit without regard to whether the demand in the United States be large or small.

It does not follow that because business is good in this country it is equally good abroad. Sometimes exactly the reverse is true, and if American manufacturers govern their foreign business by the American market they are liable to make their prices too high in other countries. At the present time, with the home market ready to take every tool that can be produced the moment it is ready for delivery and buying machines months in advance of deliveries, there is no great regret in losing foreign business. But most machine tool builders prefer to hold some foreign trade, even at less profit than can be made at home. In the face of growing competition from European countries, which comes with the improvement in their tools and more economical method of building them, it is necessary that a continuous effort be made to cultivate foreign markets so that when the demand falls off at home foreign customers shall be ready to assist with their orders in keeping the shops busy. Foreign orders have at times kept works running when they would otherwise have been forced to shut down, which would have meant not only money loss but serious disarrangement of shop organiztion. The foreign dealers, who may be presumed to understand the trade of the countries which they cover, would hardly make impracticable recommendations, and if in their opinion an inflexible price should be maintained on American machine tools the manufacturers may well give the subject serious consideration.

Lessons from the Industrial Census.

The advance statement of the comparative summary of the manufacturing industry of the United States, the result of the census for the years 1900 and 1905, as given out by the Census Bureau, contains very interesting information apart from the actual figures in dollars and percentages. The increase in the value of products from $6,807,000,000 to $8,980,000,000; of the capital invested from $5,166,000,000 to $7,375,000,000; of the total cost of product from $6,008,000,000 to $7,977,000,000, is a stupendous fact. The other figures of the statement equally appeal to the country's pride. But the analysis can be carried farther, resulting in important deductions as to changes in the relations of the several great factors in business each to the others. The summarized statement of the Census Bureau appears below. In giving it we do not follow the designations of the Census Bureau, which has labeled one set of figures "1905," because gathered in 1905, and the other "1900." It should be explained that the so-called 1905 figures are for the calendar year 1904, which was very different so far as the iron trade is concerned from 1905. The 1900 figures are for the year beginning June 1, 1899 and ending May 31, 1900:

	1904.	1900.	Per cent. Increase.
Establishments in 46 States	133,137	126,306	5.4
Capital invested	$7,375,930,540	$5,166,172,164	42.8
Salaried officials, clerks, &c.	301,212	213,170	41.3
Salaries of officials, clerks, &c.	$330,991,359	$218,927,889	51.2
Number of wage earners	3,331,733	2,865,323	16.3
Wages of wage earners	$1,558,191,228	$1,178,106,366	32.3
Miscellaneous expenses	$833,348,646	$511,197,892	63.0
Cost of materials used	$5,254,286,858	$4,099,920,710	31.0
Value of products, including custom work and repairing	$8,980,454,376	$6,807,801,288	31.9

In getting at the meaning of these figures it is necessary to take into consideration that the census year ending May 31, 1900, and that ending December 31, 1904, were not equally prosperous. The former year was an exceptional one in manufacturing. The word "boom" may be applied to conditions as they then existed. Demand from abroad was great and coupled with it was a tremendous domestic business. The year 1905 was a year of reaction. A better comparison could have been made between conditions in 1900 and those of 1905, or of the present year. Furthermore, in five years the continued introduction of labor saving machinery and appliances for the more economical handling of product and of raw materials, the building of more economical power plants, and the other improvements which reduce expense, altogether constitute an important factor, which must be used as a correction in drawing conclusions based on the figures. But taking into account these betterments of manufacturing methods, and the differences in industrial conditions in the two years, the results of a close inspection of the figures are still interesting and, perhaps, important.

The five years appear to have reduced the percentage of profit on the capital invested. Adding together the items of salaries, wages, miscellaneous expenses and cost of materials as the most of the product, and taking the total value of the products as the selling price, the invested capital earned 15.5 per cent. in 1900, and 13.6 per cent. in 1904. While the volume of business grew remarkably, the margin of profit decreased in a larger way than a casual comparison of the two percentages of profit would indicate. The falling off of 1.9 in the percentage of profit, figures as 12 per cent. of 15.4 per cent. In other words the income from the invested capital, fell off 12 per cent. The product was more expensive to manufacture and market, as compared to the selling price.

Some idea of the reason for this change may be obtained from the relation which each of the four great items of costs bears to the value of the total product. In 1900 wages constituted 17.30 per cent. of the total value, in 1904, 17.35 per cent; salaries, 3.21 per cent. in 1900, and 3.68 per cent in 1904; miscellaneous expenses, 7.5 per cent in 1900, and 9.27 per cent. in 1904; materials, 60.2 per cent in 1900, and 58.5 per cent. in 1904.

It will be noted that while wages and salaries increased but slightly in relation to total product, and the cost of materials decreased a little, miscellaneous expenses advanced very materially. The percentage this item constitutes of the total value of product advanced nearly 24 per cent., for 9.27 is that much greater than 7.5.

It seems a fair deduction that a considerable factor in this increase is also a factor in the great industrial growth of the five years. Progressive business methods have been employed in enlarging the market for American goods, both at home and abroad. It costs money to accomplish these results. The fact that the number of salaried officials and clerks increased 41.3 per cent. in the five years as compared with an increase of 16.3 per cent. in the number of wage-earners suggests the greater attention paid to developing the office end of the business, including the sales departments. It is possible that the general acceptance of the modern cost system as an indispensable adjunct of the manufacturing establishment figures into the additional miscellaneous expense. It is also to be considered that in a year of slackening business fixed charges, including salaries, cannot be adjusted to volume of business or price of product.

What is said above concerning cost systems is in line with the general observation that the item of overhead or unproductive expense is growing in importance. Salaries and miscellaneous expenses may be taken as the total general expense. In reckoning this item into costs it is usually considered in its relation to the cost of productive labor. Taking the grand totals of the summary above in 1900 the general expense was 62 per cent. of the cost of labor; in 1904 it was 75 per cent. An increase of such size is important, but if it developed a largely increased volume of business, even though carried on at a

smaller profit, the money was wisely expended. It should be remembered that different business conditions in the two years in question must affect the comparison. Yet the changes which appear in the proportional part, that each item of expense bears to the total, cannot be all attributed to difference in business conditions between two years.

The figures of the summary show that the average of wages has advanced considerably more than the average of salaries. The average wage of 1900 was $411; of 1905, $468, an increase of 14 per cent. The average salary, including clerks, was $1023 in 1900 and $1099 in 1905, an increase of 7 per cent. The average wage to-day is materially in excess of that of 1904.

The increase in the number of manufacturing establishments was small—5.4 per cent.—though the increase in the amount of capital invested was 42.8 per cent. The average investment for the individual plant was $40,900 in 1900 and $55,400 in 1904, an increase of 35 per cent.

An Unreasonable Specification.

It sometimes appears as if specifications were drawn with a view to making it impossible for a bidder to furnish material that would not be rejected. The specifications for 600,000 pounds each of coke and pig iron on which the Panama Canal Commission asked for bids to be opened this week are a case in point. The coke is expected to stand the various mechanical tests—those for crushing strength, porosity, specific gravity, &c.—and it must also meet a chemical specification in which the exact content of each element is laid down to the one-thousandth of 1 per cent. To quote from the specifications, "the chemical analysis should be approximately as follows":

Water	0.03
Volatile and combustible matter	0.46
Fixed carbon	89.576
Sulphur	0.821
Ash	9.113

To be sure, the word "approximately" modifies the requirement. But those who have had any experience with a similarly worded Government specification can testify to the stringency with which this apparent latitude is construed when the Government analyst and inspector come into the case. Instances could be cited in which rejection was based on deviations from the absolute percentage named that were well within the allowable variations of the average working specification and that could not have affected the material detrimentally.

Coming to the specifications for pig iron, there is further evidence of requirements that could not have been better constructed if the avowed purpose was to provide a scheme for rejecting all offerings. The chemical analyses for No. 1 and No. 2 iron are as follows:

	No. 1.	No. 2.
Iron	92.37	92.31
Graphitic carbon	3.52	2.99
Combined carbon	0.13	0.37
Silicon	2.44	2.52
Phosphorus	1.25	1.08
Sulphur	0.02	0.02
Manganese	0.28	0.72

Saying nothing of the fact that analyses of six metalloids are called for, one looks in vain for the usual leeway in these percentages. Instead of calling for 2.25 to 2.75 in silicon, as has long been common in good practice, this element is specified to the exact one-hundredth of 1 per cent., tempered with the same "approximately" that appears in the coke specification, but that is of absolutely no practical help to the manufacturer. Similarly in phosphorus, the usual guarantee against a variation of more than, say, 0.20 per cent. is replaced by a definite percentage which no bidder would attempt to comply with if he had ever had experience with department interpretation of allowable latitude. If the qualification "approximately" really signified anything the required percentages would be stated in round figures. To ask for "approximately" 2.99 per cent. of graphitic carbon, for example, easily suggests that 3 per cent. would be excessive. Similarly, to ask for 2.52 per cent. silicon is construed to mean that a 2.50 silicon metal would be too low. The further provision that final inspection is to be at the point of delivery on the Isthmus, with no opportunity for the seller to market his iron in case of rejection, adds nothing to the attractiveness of the proposition.

If the purpose was to prepare pig iron and coke specifications showing the most distinct departure from the practice followed in the iron trade, the specification expert of the Canal Commission has scored a success.

If business conditions depended solely upon the crops prospects for another year of prosperity could hardly be better. The Government report issued on Tuesday of this week indicates a wheat crop approximating the largest the country ever harvested and a corn crop exceeding even the record breaker of last year. The critical period for spring wheat and corn is still to be passed, but even with considerable deterioration these crops could be well above the average. With nature thus favoring this country it will clearly be man's fault if adversity comes.

CORRESPONDENCE.

Making Nuts and Rings Without Waste.

To the Editor: In the issue of *The Iron Age* of June 28, page 2048, is an article on "Making Nuts and Rings Without Waste," in which unfortunately the date of the inventions referred to is not mentioned. This may cause some trouble in the case of litigation, since the claim might be made that through such a publication the inventions have been made public property. I know that the patents on the methods described in Figs. 1, 2, 4 and 8 are controlled by manufacturers in this country, and that the patents upon all of them are in force, and in some instances are recent.

PITTSBURGH.

British Pig Iron Stocks Decreasing.—Stocks of warrant pig iron in England have decreased considerably in the past three months. The total of Cleveland pig iron in Connal's public stores on March 5, 1906, was 750,095 tons, the largest amount ever held at one time. There has been a practically continuous decrease since that date and on June 28 the amount in Connal's stores was 642,047 tons. The shipments of pig iron from the Cleveland district to Germany increased in June over those in May, even though the record for May was considered remarkable. The June shipments out of the district, up to June 28, were 120,902 tons, as compared with 118,002 tons for the full month of May, 1906, and 82,078 tons for the month of June, 1905. As German iron masters are taking steps to increase their pig iron production it is not expected that the exports of Cleveland iron in the second half of this year will equal those of the first half.

Advices from Seattle, Wash., state that the Bartels Tin Mining Company is working 100 men on its properties at Tin City, Alaska. It is said that shipments of tin concentrates to Seattle for the past six months will net $200,000. The Bartels Company property consists of 1300 acres of land and the ore taken out is reported to assay from 10 to 70 per cent. tin. The discovery of tin ore was made near Cape York in the Seward Peninsula district of Cape Prince of Wales.

Canada's Increasing Requirements.

National Transcontinental Railway Contracts.

TORONTO, July 7, 1906.—The contracts for track material recommended by the National Transcontinental Railway Commission were duly confirmed by the Government and are now in effect. They call for an expenditure of $2,488,450. The points of delivery are Quebec City and Fort William, material for the 150-mile section between Quebec and La Terque being receivable at Quebec and that for the 245-mile section between Lake Superior Junction and Winnipeg being receivable at Fort William or Port Arthur. For the rails the price varied from $34 to $34.50 per ton, 55,000 tons to be at the former price and 10,000 tons at the latter. The bolts were placed at $3.41 to $3.65 per 100 pounds and the spikes at $2.50 to $2.55 per 100 pounds.

From the dates named in the contracts it is to be inferred that the commission means to have the two sections ready for the traffic of the autumn of 1907. It is known to be the commission's intention to have the Winnipeg-Lake Superior Junction section finished in time for the movement of next year's crop from the Western interior. By that time parts of the Grand Trunk Pacific Company's own system that are to be brought into connection by the section will be ready.

Work on the Canadian Pacific Railway.

At the present time the Canadian Pacific Railway Company has 19 new lines under construction, the principal ones being the line from Winnipeg to Edmonton and that duplicating the section between Winnipeg and Fort William. At the end of the year it will have several hundred miles of new road in operation. The National Transcontinental project, with its proposed system of 5000 miles of branch lines, has given a great impetus to expansion on the part of the Canadian Pacific and the Canadian Northern companies. J. J. Hill's Canadian enterprise has also had an impelling influence to increase the mileage of the Canadian Pacific, which will not allow any important district to fall wholly within the Hill sphere. Track laying on Hill's Victoria, Vancouver & Eastern Railway has begun on the main line west of Midway. That road is being laid with 90-pound rails.

To Increase Output.

With railroad building proceeding at its present rate for the next three or four years it will be necessary for Canadian plants to increase their output. The additions to be made in the Algoma Steel Company's pig iron output will serve to keep the rail mill constantly working up to its full capacity and thus increase the production of rails. Changes in progress in the Sydney Works will have a similar effect. In his address at the annual meeting of the Dominion Iron & Steel Company Mr. Plummer, the president, referred to these changes as follows:

As to the output, the improvement has gone on very steadily since November and December. Speaking roughly, we have brought the production of steel up from 14,000 tons a month to 20,000 tons a month, and the costs have naturally been improved. We have suffered in costs a little by the unexpected increase in the cost of a number of the materials we use. We are using altogether pig iron from Wabana ore for the steel from which our rails are made, but we have to add manganese and other things, and these materials have gone up enormously in value, which has interfered with our costs.

Mr. Jones had this to say about the new Bessemer converter and its expected effect upon output:

It is not really to be used as a Bessemer plant, but simply to desiliconize the pig iron before we use it in the open hearth. At Ensley, Ala., they have been doing that with an experimental 10-ton converter for two years, and from what I saw there I was quite satisfied that it was the correct system for the Dominion Iron & Steel Company. We feel that it should give us a substantial increase in product, and that naturally will help us, as at the present time our rolling capacity is far in excess of our steel producing capacity. It will help to balance up the plant and give better results.

Works at Bridgeburg.

The Canadian Shipbuilding Company is seeking from the Government of Ontario rights on the Niagara River front near Bridgeburg. Here the company has purchased 600 or 700 acres of land on which are to be established a blast furnace and other works to supply material for the building of ships in the company's yards. The power used in the new works will be brought from the plant of the Ontario Electrical Development Company at the Falls, the directing personnel of the two corporations being largely the same. Wharves and basins are required for the proposed Bridgeburg works, and it is for the right to add these that the Government is now approached by the shipbuilding company. It is looked upon as a certainty that an arrangement will be reached for the leasing of a section of the river bank to the company.

C. A. C. J.

American Attendants at the Iron and Steel Institute Meeting.

Below are given the names of the American members of the American Institute of Mining Engineers and their guests, who have signified to the British committee their intention of making the tour to Middlesbrough, Glasgow, Newcastle and other points, following the joint meeting in London, July 23 to 28, of the Iron and Steel Institute and the American Institute of Mining Engineers. The names of members accompanied by ladies are marked with an asterisk:

William Affleck, Ellsworth, Pa.; A. M. Austin,* New York.

Hugh A. Bain,* Riverside, Cal.; Geo. D. Barron,* Rye, N. Y.; Victor M. Braschi,* Mexico City; Wm. M. Brewer, Victoria, B. C.

Charles Catlett, Staunton, Va.; H. S. Chamberlain,* Chattanooga, Tenn.; Albert Ladd Colby,* New York; T. I. Crane,* Philadelphia; W. H. Crawford, Nashville, Tenn.

Charles E. Dinkey, Braddock, Pa.; W. H. Donner, Pittsburgh, Pa.; Theodore Dwight, New York; G. M. Davidson,* Chicago.

James W. Ellsworth, New York.

B. F. Fackenthal, Jr.,* Easton, Pa.; H. P. Fogh,* Seattle, Wash.; Paul R. Forbes, Boston, Mass.; J. Sharshall Grasty, Staunton, Va.

Jos. Hartshorne, Pottstown, Pa.; Victor G. Hills,* Colorado; Ferdinand Howald, Columbus, Ohio; Alex. C. Humphreys, New York; Robert W. Hunt,* Chicago; Edward S. Hutchinson,* Newtown, Pa.

Charles Kirchhoff,* New York; William Kent,* Syracuse, N. Y.; Julian Kennedy,* Pittsburgh, Pa.; Paul S. King, New York.

J. Langeloth,* New York; J. H. Lee,* Baltimore, Md.; E. C. Leonard, Albany, N. Y.; Richard W. Lodge,* Boston, Mass.

E. J. McCaustland, Ithaca, N. Y.; Charles McCrery, Birmingham, Ala.; Jesse J. MacDonald,* Triunfo, Lower California; George Mesta, Pittsburgh, Pa.

R. H. Norton,* Los Angeles, Cal., and Paul L. Radir.

George Ormrod,* Allentown, Pa.

P. C. Patterson, Pittsburgh, Pa., and Mr. Bernheim; Richard Pearce, Denver, Colo.; William H. Pierce, Baltimore, Md.; S. H. Pitkin,* Cleveland, Ohio; Richard Peters,* Philadelphia, Pa.; S. M. Pitman,* Providence, R. I.

A. L. Queneau,* South Bethlehem, Pa.

R. W. Raymond, New York; D. P. Rohling,* Salt Lake City, Utah; James P. Roe,* Pottstown, Pa.

Albert Sauveur, Cambridge, Mass.; Edward Skewes,* Ontario, Canada; J. Wm. Smith,* Syracuse, N. Y.; Oberlin Smith,* Bridgeton, N. J.; H. C. E. Spence,* New Mexico; Geo. Steiger, Washington, D. C.; Jos. Struthers, New York.

Knox Taylor,* High Bridge, N. J.; L. H. Taylor, Jr., Philadelphia, Pa.; Wm. Thompson,* Chihuahua, Mexico; Harold Abbot Titcomb and Chas. C. Titcomb, New Orleans.

J. F. Vaile, Denver, Cal.; A. E. Vaughan, Brooklyn, N. Y.

Charles E. Wait,* Knoxville, Tenn., and Jas. Douglas Bruce; H. Vincent Wallace, Sonora, Mex.; Charles H. White, Cambridge, Mass.; Newton R. Wilson,* Monterey, Mex.; Walter Wood, Philadelphia, Pa.; Wm. H. Wiley,* New York.

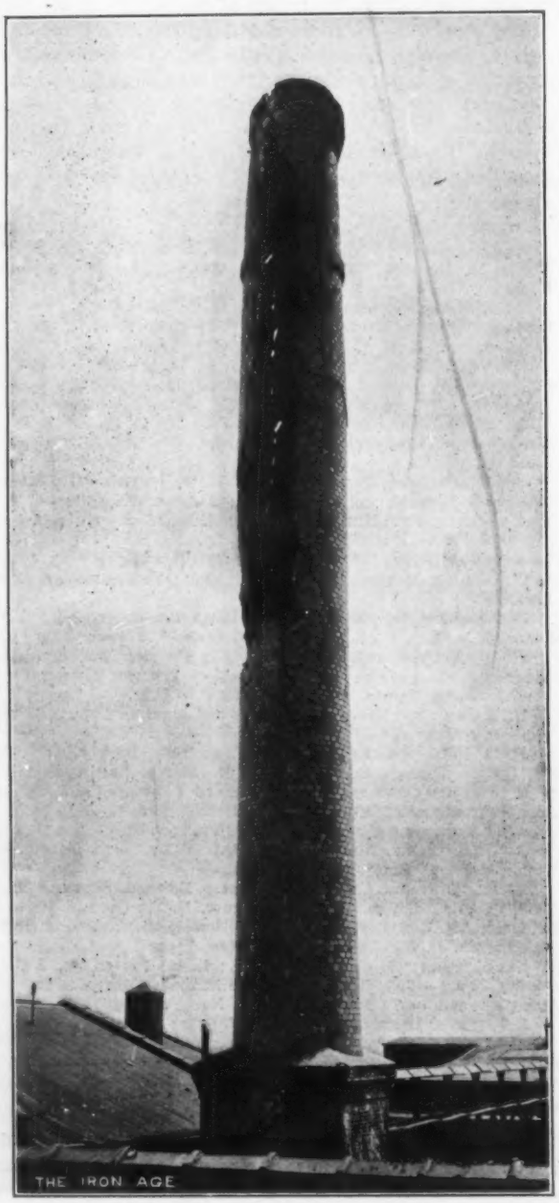
James E. York,* Brooklyn, N. Y.

Some of the above have already sailed for England. The majority of the party, including the officers of the American Institute of Mining Engineers, sail from New York on the Cedric on Friday, July 12. A number of American members of the institute whose names are not given above expect to attend the London meeting, but have not registered among those who will take the provincial tour.

Marseilles is completing a new electric generating station containing six 1000-kw. and three 300-kw. units. The City Gas & Electric Company is erecting the plant, the electric units being furnished by the Paris shops of the Thomson-Houston Company. The station, which, it is expected, will be ready for operation in September, is located near the gas works on the company's property. The large units are direct coupled, and run at a frequency of 25 cycles. The smaller units have the higher frequency of 50 cycles per second, and are operated by steam turbines of the vertical Curtis type, running at 1500 rev. per min.

Lightning's Pranks with a Factory Chimney.

As if to appropriate to itself the credit of starting the celebration of Independence Day, a bolt of lightning struck the large stack of the manufacturing department of the Colwell Lead Company, Bayway Station, Elizabeth, N. J., formerly known as the American Sanitary Works, at 3 o'clock in the morning, demolishing a good part of it and putting the entire plant out of commission. While several high chimneys are struck every year, there are few instances on record where the lightning has done so much damage to a stack as it did to this one. As the plant is isolated, this chimney, which



Lightning's Work on the Stack of the Colwell Lead Company, Elizabeth, N. J.

rises to a hight of 90 ft., stands out very prominently. It has a square base 25 ft. high, the remaining 65 ft. being circular in form. It is constructed of hollow brick, said to hold better than solid brick, and is capped with an iron ring.

On the side of the chimney toward the power house, to which it is attached, the bolt struck the iron ring, splitting it, and then tore away about a quarter of the circumference of the chimney from the top down to within 25 ft. of the base, leaving a jagged hole 40 ft. long. The lightning evidently ran down the inside, as in addition to producing large cracks, some of them wide enough to admit light, it glanced off and ripped away the inner half of the bricks covering an area of about 5 ft. square opposite and a little below the large hole, but leaving the outer half of the bricks intact. The destroyed stack is shown in the illustration herewith, which clearly pictures the large portion that was torn off. A couple of feet to the left of this hole there is a vertical crack about 1 in. wide, leaving between the two a narrow shell of brick, held apparently at the top by the iron cap and resting on a few bricks. From the top to the base are wide cracks every few feet running around the chimney. The base is practically uninjured, but part of one side of the roof of the power house was crushed in by the masses of brick that fell.

The chimney is so weakened, particularly the upper half, that it is likely to topple over at any time. Should it fall it would probably do considerable damage, as it is in the center of a group of buildings, some of them only 20 or 30 ft. away. Owing to the close proximity of the buildings the wrecking of the stack will be an interesting piece of work. The contract for wrecking and rebuilding the stack on the original plans has been let, and it is expected that within three weeks the work can be completed and the power plant placed in operation. It is very unfortunate that the company was compelled to close down the plant at this time, as it has a large number of orders on hand for enameled iron bathtubs and other sanitary supplies which are produced at these works.

The Armor Plate Bids.

WASHINGTON, D. C., July 10.—Bids were opened at the Navy Department for furnishing approximately 7300 tons of armor plate for the new battleships South Carolina and Michigan. The bidders were the Midvale Steel Company, Carnegie Steel Company and Bethlehem Steel Company. The Carnegie Company's bid was $2,733,560, or $370 a ton, for each of the three classes of armor named in the specifications. The bid of the Bethlehem Company was $2,813,563, or at the rate of $381 a ton for the bulk of the armor, and $380 a ton for 600 tons of bolts and nuts. The Midvale Company's bid was in the aggregate $2,566,470, or $170,000 less than the bid of the Carnegie Company, its nearest competitor. This is at the rate of $346 a ton for class A and $345 for class B under the specifications of the Navy Department.

The last batch of armor that was contracted for cost the Government $398 a ton, and was made by the Midvale Company. It was expected that the new bids would show a reduction from that figure on the part of the Carnegie and Bethlehem companies, and that expectation was verified. But the Midvale Company also made a reduction, and its cut was greater than that of either of its competitors. The Midvale Company agrees to begin furnishing armor within five months after the contract is awarded. Both the other companies want six months for the first delivery. Each bidder agrees to supply at the rate of 600 tons a month.

Bids on Coke and Pig Iron for Panama.

WASHINGTON, D. C., July 10, 1906.—Bids were opened by the Panama Canal Commission to-day for 600,000 pounds of coke, 200,000 pounds of No. 1 pig iron and 400,000 pounds of No. 2 pig iron for delivery on the Isthmus. The bids were as follows:

Coke.—National Coal Company, Baltimore, $1350, delivered Baltimore; Pocahontas Coke Company, Bramwell, W. Va., $1320, delivered Lambert's Point, or $2520, delivered Colon; Frank Samuel, Philadelphia, $3120, delivered Colon; Stauffer-Eshleman Company, New Orleans, $3660, delivered Colon.

Pig Iron.—F. S. Banks & Co., New York, $5535.40, delivered Colon; Motley, Green & Co., New York, $5180, delivered Colon; Frank Samuel, Philadelphia, $6930, delivered Colon; Woodward, Wight & Co., New Orleans, $5520, delivered Colon.

The Pope Tin Plate Company, Steubenville, Ohio, has signed the amalgamated scale. The plant, which contains 12 hot mills and is the largest independent tin plate plant in the country, started up on Monday, July 9.

The Expansion of Lake Ore Roads.

DULUTH, MINN., July 6, 1906.—For the three largest shippers the iron ore movement in June amounted to 3,719,401 tons, and for the year to July these three roads moved 7,510,275 tons. Of the three the Duluth, Missabe & Northern is carrying out its intention of beating all records and during June moved 1,656,831 tons, a greater amount than has ever been forwarded in a single month by any railroad. The Mesaba range is proving more and more that it is the chief dependence and that it can furnish almost any amount of ore required.

Tracks of the Duluth, Missabe & Northern road will be complete to the end of the new western Mesaba line at Coleraine in a few weeks, but it is unlikely that much if any ore will be shipped off that part of the range this year. The only road reaching this district is the Duluth, Missabe & Northern. Of slightly more than 11,000,000 tons which the road proposes to move this season 3,000,000 comes from the Mountain Iron mine, 7,000,000 tons from the Hibbing district and about 1,000,000 tons from various independent mines reached by this line. Nothing will come from Coleraine, but as has been stated there will be the greatest activity in preparing for another year.

All-Rail Ore to Gary, Ind.

It has been reported in this connection that the Duluth, Missabe & Northern, or the Oliver Iron Mining Company, has a contract with the Wisconsin Central road, which is now building a very costly line into this city and to a connection with other roads here, for the handling of a large amount of iron ore daily for a term of years, to be delivered at the new town of Gary, for the works under construction there.

The Duluth & Iron Range road has completed the last of its double track line between its docks at Two Harbors and the end of its Mesaba main line at Eveleth. This gives it about 75 miles of double track, and covers all its ore traffic except the 2,000,000 tons it is moving off the Vermilion range, which is handled over a single line as far as the Mesaba junction point. Now all three of the Mesaba ore roads are double tracked their entire length, though the Great Northern is composed of two single lines several miles distant from each other. Two of the roads are troubled by a lack of cars, the Great Northern especially so. The Duluth, Missabe & Northern and the Duluth & Iron Range both booked their equipment orders early last year, and those for the first named were very large, from which it is now deriving great benefit, while its shippers are warm in appreciation of the early realization of their probable requirements.

Shipping Estimates Reduced.

Some little time ago attention was called in this correspondence to the probable shipments of ore for the season from the head of the lake, showing the total to be 25,000,000 to 26,000,000 tons. This seems to have caused a revision of estimates of 38,000,000 to 40,000,000 tons for the season movement from all ports. They will doubtless fall much below that, as has been intimated in this correspondence all spring. Everything seems to be moving well and without drag, and it is quite evident that the early tremendous estimates were drawn from an altogether too optimistic view of the possibilities. Old range mines are not able to increase very much, and the Mesaba, while it can produce almost any amount of certain grades, cannot put into consumption the classes of ores in which it is capable of immediate and indefinite extension. These are not its most desirable ores in many cases, and that is a fact that must be considered at all times. The railroads, vessels and receiving docks seem to be doing quite well.

The rumor has become current in iron circles, on account of some incorrect statements from drill runners, that the Illinois mine in the Baraboo district was closed. This is not true. The Illinois mine shipped in May 6300 tons of ore, averaging 54.62 per cent. in iron and 0.047 per cent. in phosphorus, a very satisfactory record, and in June it did about the same. The complete June records are not at hand, but indications were for about the same business as for May. This rate is slightly higher than the average in 1905. The mine underground is looking as well as it ever did or better. Much of the exploration in the district has gradually ceased, but the original operators are still busy and are well satisfied with results.

A Contest Over the Clark and Leonard Mines.

At Duluth the third fight for ownership of at least a part of the lands of the Clark Iron Company, which has the Clark and Leonard mines and some explorations that are under way and show ore, is in progress. Interested with the Clark company in defense is the Oliver Iron Mining Company, which holds the Clark mine under a lease originally given the American Mining Company, and the Great Northern road, which is real owner of the lease of the Leonard mine. It is in evidence that something like 8,000,000 tons of good ore on the lands was shown up at the time the things were done upon which this suit is based. These are an alleged fraud in the title, by which minor heirs were defrauded of their rights by men who sold their fraudulent titles to the Clark Iron Company.

D. E. W.

Labor Notes.

The shearmen and molders at the Laughlin plant of the American Sheet & Tin Plate Company, Martins Ferry, Ohio, have refused to work on account of dissatisfaction with the scale recently signed in Pittsburgh.

A meeting of the Executive Board of the Amalgamated Association will be held this week for the purpose of taking action in regard to a wage scale for the 18-in. mill of the Brown-Bonnell works of the Republic Iron & Steel Company, Youngstown, Ohio. The men have demanded a special scale for this mill, but the company has refused to grant it.

Boiler makers at Youngstown, Ohio, have been granted an increase in wages from $3 to $3.50 per day.

So far machine shop owners in the Pittsburgh District have refused to grant the demands of the machinists for an advance in wages to become effective August 10. Their demands are for an eight-hour day, minimum pay of 40 cents an hour, time and one-half to be paid for all overtime up to midnight after 12 o'clock; Sundays and all legal holidays to be paid at rate of double time; standard-night's work 10 hours per night for the first four nights and eight hours for fifth night.

Ryerson Warehouse Enlargement.—The business facilities of Joseph T. Ryerson & Son, Chicago, are being greatly increased by the addition of a new building to that group of their warehouses extending from Fifteenth to Seventeenth street, and from Campbell avenue to Rockwell street, covering two city blocks. An assorted stock of structural shapes will be carried in this building, as well as bars and plates, and will supplement the stock of tubes, sheets, rivets and other iron and steel commodities carried in other warehouses of the company. Fourteen machines will be installed to be used for cutting material to length and other small fabrication as called for. This building will be of steel construction throughout, 500 ft. long and 385 ft. wide, divided into three bays, and will be served by four electric traveling cranes of 10 tons capacity, each running the entire length of the building. These travelers are so arranged that in addition to serving the bays in which they are located lengthwise they can transfer material to other bays, facilitating the handling of stock in all parts of the plant.

By order of the United States Court, made at Montgomery, Ala., July 10, the properties of the Lookout Mountain Iron Company will be sold at auction at Birmingham on October 3. The properties comprise one blast furnace, iron ore and coal mines and 150 coke ovens, costing originally $1,500,000.

Pig Iron Production Decreasing.

The output of the coke and anthracite blast furnaces of the country continues to decline. Our statistics show that the total production in the 30 days of June was 1,970,733 gross tons, as compared with 2,098,746 tons in May, and 2,073,222 tons in April. There was thus a falling off in June of over 100,000 tons from the production of April, the last preceding month of 30 days. June was a rather trying month for a good many furnace managers, and in addition to poor working the number of furnaces compelled to go out for relining militated against output. The number of furnaces active on July 1 was 290, as against 296 on June 1, and the weekly capacity was 460,490 tons, against 472,622 tons.

The following table gives the production in June as compared with the records for the preceding four months:

Monthly Pig Iron Production.—Gross Tons.

	February. (28 days)	March. (31 days)	April. (30 days)	May. (31 days)	June. (30 days)
New York....	121,484	135,713	127,674	134,048	129,834
New Jersey...	18,280	28,840	38,742	35,973	32,858
Lehigh Valley.	55,218	62,724	56,718	53,613	49,704
Schuylkill Val.	47,852	54,826	52,492	48,760	56,921
Lower Susquehanna and Lebanon Val.	57,979	69,225	61,831	57,951	60,219
Pittsburgh dis.	454,611	533,100	498,874	509,777	487,900
Shenango Val.	153,551	178,378	172,342	176,913	157,313
West. Penn..	105,177	106,338	105,190	112,985	100,505
Md., Va. and Kentucky....	75,251	83,031	75,030	77,069	75,016
Wheeling dis..	114,324	126,343	113,188	104,109	93,618
Mahoning Val.	148,508	169,468	163,019	147,433	143,943
Central and North. Ohio.	154,298	173,494	163,152	168,672	149,944
Hocking Valley and Hanging Rock	32,514	36,675	33,940	36,103	33,559
Ill.,Mich.,Minn., Wis., Mo. and Colo.....	197,495	231,815	240,043	255,256	236,528
Alabama.....	134,792	135,739	137,049	137,790	124,606
Tennessee, No. Carolina and Georgia.....	32,698	39,923	38,938	42,294	38,265
Totals....	1,904,032	2,165,632	2,073,222	2,098,746	1,970,733

Production of Steel Companies.—Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawana, Wheeling, Republic, Jones & Laughlin, La Belle, Bethlehem, Calumet and Colorado companies show the following totals of products month by month. We present also separately monthly figures of the production of spiegeleisen and ferromanganese, which is included in the total:

Production of Steel Companies.—Gross Tons.

	Pig.—Total production.—			Spiegeleisen and ferromanganese.	
	1904.	1905.	1906.	1905.	1906.
January	502,994	1,129,042	1,358,015	21,002	26,305
February	756,260	1,027,937	1,226,760	22,431	26,988
March	913,412	1,232,255	1,400,395	21,280	23,595
April	974,006	1,222,710	1,333,591	20,038	28,054
May	927,534	1,287,438	1,372,423	24,732	29,447
June	788,822	1,149,404	1,293,437	21,761	22,737
July	694,892	1,114,409	...	31,220	...
August	747,570	1,186,050	...	27,461	...
September ...	936,494	1,262,033	...	21,645	...
October	971,447	1,370,960	...	26,799	...
November	962,384	1,334,644	...	23,776	...
December 1,019,841		1,356,962	...	29,481	...

Among furnaces blown in in June were E of the Edgan Thomson group, Clinton at Pittsburgh, Sharpsville in the Shenango Valley, one Cambria at Johnstown, Pa., one Lebanon of the Pennsylvania Steel Company, Max Meadows and West End in Virginia, Belmont in the Wheeling District, one South Chicago, Haselton in the Mahoning Valley, and No. 2 Rockhill in western Pennsylvania.

Among furnaces blown out were Claire in the Shenango Valley, Marshall and No. 1 Rockhill in western Pennsylvania, both stacks of the Columbus Iron & Steel Company at Columbus, Ohio, Toledo at Toledo, Ohio, Star and one Wellston in the Hanging Rock region, one Joliet and one North Works of the Illinois Steel Company, Thomas at Milwaukee, Cherry Valley in the Mahoning Valley, No. 1 Crozer in Virginia, Philadelphia and Ella in Alabama, and Citico in Tennessee.

The table below gives the active capacity per week of furnaces producing coke and anthracite iron on July 1, and the corresponding figures for June 1:

Coke and Anthracite Furnaces in Blast.

Location of furnaces.	Total number of stacks.	July 1. Number in blast.	July 1. Capacity per week.	June 1. Number in blast.	June 1. Capacity per week.
New York:					
Buffalo 13		13	26,290	13	25,851
Other New York...10		4	4,004	4	4,418
New Jersey..... 8		7	7,514	7	7,944
Spiegel 2		2	161	2	182
Pennsylvania:					
Lehigh Valley.....27		16	11,370	16	11,746
Spiegel 2		2	227	2	360
Schuylkill Valley...13		12	13,282	12	11,615
Low. Susquehanna.. 9		4	6,863	5	5,824
Spiegel 1		1	365	1	599
Lebanon Valley....11		10	7,523	9	6,457
Pittsburgh dist....41		41	112,845	39	113,243
Spiegel 3		3	2,639	3	2,716
Shenango Valley...20		19	36,546	19	39,949
West. Penn.....24		18	24,149	18	23,706
Maryland 5		4	7,471	4	8,078
Wheeling dist.....14		12	22,708	11	23,627
Ohio:					
Mahoning Valley...16		14	34,216	14	33,516
Cent. and Northern and Michigan....19		16	34,566	19	39,711
Hocking Valley and Hanging Rock...12		10	7,939	11	7,906
Illinois 19		17	38,483	18	39,504
Spiegel 3		2	1,201	3	1,785
Minnesota 1		1	1,243	1	1,155
Wisconsin 5		4	4,366	5	5,593
Missouri 1		1	770	1	903
Colorado 4		3	6,075	3	6,265
Spiegel 1		1	720	1	805
The South:					
Virginia 23		13	9,033	12	8,402
Kentucky 7		2	1,140	2	1,232
Alabama 46		23	28,072	25	30,107
Tennessee 16		14	7,764	15	8,724
Georgia 1		1	945	1	699
North Carolina.... 1		0	0	0	0
Totals.....378		290	460,490	296	472,622

For a series of months the active coke and anthracite capacity fluctuated as follows, in gross tons:

	Capacity per week.		Capacity per week.
July 1.....	460,490	March 1.....	308,751
June 1.....	472,622	February 1.....	273,692
May 1.....	484,031	January 1, 1904....	185,636
April 1.....	484,240	December 1, 1903...	244,156
March 1.....	479,737	November 1.....	273,715
February 1.....	482,156	October 1.....	353,142
January 1, 1906....	463,673	September 1.....	360,197
December 1, 1905...	475,814	August 1.....	353,681
November 1.....	460,449	July 1.....	384,825
October 1.....	445,468	June 1.....	388,178
September 1.....	412,563	May 1.....	373,496
August 1.....	410,088	April 1.....	386,215
July 1.....	408,617	March 1.....	347,424
June 1.....	443,092	February 1.....	335,339
May 1.....	452,031	January 1, 1903....	346,073
April 1.....	439,564	December 1, 1902...	336,617
March 1.....	403,157	November 1.....	330,110
February 1.....	405,792	October 1.....	337,837
January 1, 1905....	377,879	September 1.....	328,243
December 1, 1904...	357,846	August 1.....	328,745
November 1.....	334,249	July 1.....	303,793
October 1.....	319,249	June 1.....	337,492
September 1.....	291,573	May 1.....	337,627
August 1.....	246,092	April 1.....	331,140
July 1.....	272,301	March 1.....	316,039
June 1.....	336,107	February 1.....	325,440
May 1.....	368,244	January 1, 1902....	291,992
April 1.....	337,257		

The Steel Corporation Increasing Its Cement Capacity.—In addition to duplicating the 2000-barrel furnace slag cement plant of the Illinois Steel Company at Chicago, the United States Steel Corporation has begun the erection of a cement plant for the Pittsburgh District. The works are to be built near North Bessemer, on the Bessemer Railroad, and will draw raw material from the different furnaces of the district. The capacity of the plant will be from 1500 to 2000 barrels per day.

PERSONAL.

Wm. Larimer Jones, general manager of the Jones & Laughlin Steel Company, returned last week from a trip to Europe.

Enos Ayres, son of the well-known mining expert, H. R. Ayres, deceased, has joined the Traylor Engineering Company as engineer salesman in the New York City district.

J. H. Le Fevre, formerly of the rolling department of the Lackawanna Steel Company, Buffalo, N. Y., has become assistant general superintendent of the Ensley works of the Tennessee Coal, Iron & Railroad Company.

James M. Buick, for the past seven years auditor of the American Car & Foundry Company, who was elected fourth vice-president at the meeting of the Board of Directors in New York on June 28, will continue to make his headquarters in the general offices of the company, Lincoln Trust Building, St. Louis.

Frank S. Witherbee of Witherbee, Sherman & Co., Port Henry, N. Y., sailed for Europe last week.

John Reid, general manager of the Jordan L. Mott Iron Works of New York, has been nominated as a trustee of the New York Life Insurance Company.

Jeremiah Dwyer, president of the Michigan Stove Company, Detroit, Mich., has been making an extensive tour, visiting Australia, China, Japan and the Philippines. The Australian branch of the Michigan Stove Company is in charge of Mr. Dwyer's son.

Fred Conlin, general manager of the Bethlehem Foundry & Machine Works, has been appointed sales agent of the Bethlehem Steel Company. C. A. Buck, chief chemist, has been made assistant superintendent in place of Merritt Halliday, resigned. John Herbig has been appointed superintendent of all the machine shops. Wm. Frederick, the head of the traffic department, which employed a large number of clerks, has resigned, and the department is reported to have been abolished.

Alexander Taylor has been made manager of works of the four plants owned by the Westinghouse Electric & Mfg. Company, these being located at East Pittsburgh, Allegheny, Newark and Cleveland.

J. J. Wilkinson, who for two years has been assistant superintendent of No. 1 open hearth plant at the Homestead Steel Works of the Carnegie Steel Company, has been appointed general superintendent of both the No. 1 and No. 2 Homestead open hearth plants.

William F. Gleason has resigned as district superintendent of the open hearth plant at the Clairton works of the Carnegie Steel Company, to become general superintendent of construction for the new steel plant now being built by the United States Steel Corporation at Gary, Ind.

William Cameron, formerly superintendent of the Wheeling Can Company, Wheeling, W. Va., has resigned, and will engage in business in Chicago.

D. D. Mullen has been appointed general superintendent of open hearth plant No. 4 at the Homestead Steel Works of the Carnegie Steel Company, which is now being built.

A 1200-ton forging press was recently supplied by Davey Brothers, Limited, to Brown Bayley's Steel Works in Sheffield, England. It is claimed that much more work can be done under the press per heat and per day than under a hammer of equivalent power. The press is worked by a steam hydraulic intensifier. The lifting speed of the press head is 12 in. per second; the falling speed of the press head 18 in. per second; the press speed when forging is 3 in. per second, and the press speed when cutting 4 in. per second. Rapid short strokes when rounding a forging or swaging are made at the rate of 45 to 60 per minute, according to the length of the stroke. The steam intensifier makes its full upward stroke of 6 ft. in 1½ seconds, and its return stroke in 1 second, equivalent to a piston speed of almost 300 ft. per minute.

NEWS OF THE WORKS.

Iron and Steel.

One blast furnace at the Minnequa works of the Colorado Fuel & Iron Company, Pueblo, Colo., blew out on June 28, and on the same day another stack was blown in.

No. 1 stack of the Rockhill Furnace Company, Rockhill Furnace, Pa., was blown out on June 17, and No. 2 stack of the same company was blown in on June 28.

Belmont Furnace of the Wheeling Steel & Iron Company, Wheeling, W. Va., was blown in on June 19.

Both furnaces of the Columbus Iron & Steel Company, Columbus, Ohio, were in blast on June 1, and both were out for repairs on July 1.

Star Furnace at Jackson, Ohio, in the Hanging Rock District, was blown out for repairs on June 3. It will probably be blown in this week.

Thomas Furnace of the Thomas Furnace Company, Milwaukee, Wis., was blown out on June 17 for repairs and will resume in the latter part of July.

The furnace of the Cherry Valley Iron Company at Leetonia, Ohio, was blown out on June 13.

Ella Furnace of the Lacey-Buek Iron Company at Trussville, Ala., was blown out for relining on June 15, and will be blown in about August 15.

Philadelphia Furnace of the Sloss-Sheffield Steel & Iron Company, at Florence, Ala., was blown out for repairs on June 28.

Citico Furnace of the Citico Furnace Company, Chattanooga, Tenn., was blown out on June 10.

The New York State Steel Company, which is erecting a plant at Buffalo, N. Y., has leased a small tract of ore land on the Mesaba range near the Big Mountain iron mine and is exploring the property.

The Morgan Spring Company will soon commence operating its plant at East Youngstown, Ohio, double turn. This company manufactures drawn wire and springs.

A number of Erie, Pa., capitalists, together with T. S. Clark, E. H. Williams and Alfred Perkins, all of Sharon, Pa., have had plans completed for the erection of a blast furnace at Erie, which will be the first furnace that the city has ever had. The demand is said to be so heavy that the entire output can be disposed of in that city alone. E. H. Williams will be the manager of the furnace.

The Zug Iron & Steel Company, Pittsburgh, maker of sheets and merchant bars in iron and steel, has signed the Amalgamated scale and its plant is in full operation.

The steel hoop mills of the Carnegie Steel Company in the Youngstown, Ohio, district, which have been closed since July 1 for inventory and repairs, started up on Monday, July 9.

Furnace E of the Edgar Thomson group, Braddock, Pa., was blown in on June 16 after being relined.

Clinton Furnace of the Clinton Iron & Steel Company, Pittsburgh, was blown in on June 8 after being idle five weeks for repairs.

General Machinery.

Lee Totten and others have organized a company which has taken over the North Texas Iron Works, Paris, Texas. The officers are Lee Totten, president; C. J. Turner, vice-president, and J. N. Totten, secretary and treasurer.

The Owensboro Forging Company, Owensboro, Ky., will go into liquidation. The debts of the company will be paid in full, and it is understood that a new company will be organized to carry on the business.

Horace Purinton & Co., Waterfield, Maine, have been awarded a contract for building an addition to the Maine Central Rail road shops. The new building will be of brick, 100 ft. square.

It is understood that the Wheeling & Lake Erie Railroad is to move its shops from Canton to Brewster, Ohio.

The buildings for the new plant of the Russell-Compton Company, Spartanburg, S. C., which was recently incorporated, with a capital stock of $25,000, are rapidly being completed. The plant will be located on the railroad and will consist of a foundry, 40 x 100 ft., and machine shop, 55 x 100 ft., two stories, both of brick construction. The company will equip the plant for a general machine and foundry business. W. H. Russell is president and treasurer, and R. W. Compton, vice-president and general manager.

Among contracts on hand by the Lewis Foundry & Machine Company, Pittsburgh, builder of sand and chilled rolls and iron and steel rolling mill machinery, are a 12-in. mill for the Lebanon Valley Iron Company, Lebanon, Pa.; 12-in. mill, International Harvester Company, Auburn, N. Y.; 14-in. mill, Buffalo Steel Company, Tonawanda, N. Y.; 8-in. mill, Pittsburgh Steel Company, Glassport, Pa.; 10 and 13 in. mills, also lever shears and roll lathes, Baldwin Steel Company, New York; 26 and 50 in. roll lathes, Carnegie Steel Company, Pittsburgh, Pa.; lever shear, Pacific Hardware & Steel Company, Portland, Ore.; rotary shear, Bridgeport Brass Company, Bridgeport, Conn.;

sliding hot saw, Hofius Steel Equipment Company, Seattle, Wash.

Among recent installations of its apparatus by the B. F. Sturtevant Company, Boston, Mass., are mechanical ventilating and heating systems in a number of school and other buildings; Page Belting Company, Concord, N. H.; mechanical draft, Marshall Light, Heat & Power Company, Marshall, Mo.; New York Post Office, New York; Nichols Copper Company, Laurel Hill, L. I.; hot blast heating and ventilating systems, Oliver Machinery Company, Grand Rapids, Mich.; Reading Paper Mills, Reading, Pa.; Stromberg & Carlson Telephone Mfg. Company, Rochester, N. Y.; generating sets, Burlee Dry Dock Company, Port Richmond, S. I.; Maryland Steel Company, Sparrows Point, Md.; Tintern Manor Water Company, Long Branch, N. J.

The first of the 35 locomotives which are to be used on the electrified part of the New York, New Haven & Hartford Railroad between New York and Stamford, Conn., are undergoing practical tests on the Westinghouse Inter-Works Railway at East Pittsburgh.

Power Plant Equipment.

W. S. Barstow & Co. have been engaged as engineers for remodeling the plant of the Jamestown Worsted Mills, Jamestown, N. Y. Plans will be drawn covering an extensive addition to the power plant and the plant will be changed over to an electric motor drive throughout. Barstow & Co. recently completed a similar installation for the Hartford Carpet Corporation, Thompsonville, Conn.

The Crocker-Wheeler Company, Ampere, N. J., has recently received an order from the Enfield Construction Company, Windsor Locks, Conn., for two alternating current generators; National Tube Company, McKeesport, Pa., 21 direct current motors ranging from 6 to 75 hp.; Pensacola Electrical Terminal Railroad Company, Pensacola, Fla., 100-kw. alternating current engine type generator; New Jersey Zinc Company, Franklin, N. J., 125-hp. direct current motor.

The Philadelphia Rapid Transit Company has recently placed an order with the Westinghouse Machine Company, Pittsburgh, Pa., for a complete equipment of Roney mechanical stokers for its large power plant now building in Philadelphia. The order covers stokers for the entire boiler plant of 32,700 hp. Other orders for mechanical stokers recently secured by the Westinghouse Company include: New York, New Haven & Hartford Railroad, 12 stokers for power house for the New York terminal; United Railways & Electric Company, Baltimore, Md., stokers for three new batteries on the second tier; American Steel & Wire Company, Pittsburgh, stoker equipment for 19 boilers.

Foundries.

The Wisconsin Foundry Company, Milwaukee, Wis., has been incorporated with a capital stock of $20,000 by J. R. Smith, A. E. Smith and Gerhard Mockley. The company, in connection with the Smith Machinery Company, is building a concrete shop, 82 x 100 ft. at Thirty-second and Fond du Lac avenues, for the purpose of making castings for concrete machinery. The Smith Machinery Company is also building a machine shop on the same property, 100 x 275 ft.

The Richmond Mfg. Company, Richmond, Va., recently incorporated to manufacture structural and architectural iron and brass work and to make machine and foundry repairs, purchased the plant of the Asa Snyder Company and the Southern Mfg. Company, which it is operating at 731 East Cary street. The company has put up a new foundry, adding new machinery to it and also the machine shop.

The Bell & Fyfe Foundry Company, Brooklyn, N. Y., has sold its present plant and has leased the old Astoria Foundry, Astoria, L. I., which it will start up about September 1.

We are officially advised that the National Tube Company, Pittsburgh, is not making arrangements to erect an ingot mold foundry at South Lorain, Ohio. Several years ago the company took over the property of the Lorain Foundry Company, since which time all of the ingot molds used in its Bessemer steel plant at that place have been made by the company itself. The National Tube Company is not building any new blast furnaces at Lorain, but is extending its ore dock and has let contracts for two additional Hulett ore unloaders.

The Globe Iron Foundry Company is being formed at Johnstown, Pa., and a charter will be asked for the latter part of this month. Those behind the new enterprise are W. Frank Rosensteel, A. C. Simler and Percy Allen Rose.

Walter T. Dette, formerly of Buffalo, N. Y., has secured a completely equipped foundry at Garwood, N. J., which he will operate under the name of the Enterprise Foundry Company. The plant, which consists of a foundry building, 100 x 125 ft.; machine shop, 25 ft. square, and a power house, has a daily capacity of 20 tons. Repairs are now being made and it is expected that by the last of the month Mr. Dette will be able to deliver gray iron castings, which will be the sole output at the start.

Fires.

A portion of the plant of the Clark Cartridge Company, Lansing, Mich., was destroyed by fire July 3, the loss being about $35,000.

The piano factory of Lee F. Mott, Cedar Rapids, Iowa, was damaged $10,000 by fire on July 2.

Hardware.

The Ohio Shovel & Stamping Company, Canal Dover, Ohio, has commenced operations with a force of 50 men. The company reports a large number of orders on hand. Foundations have been put in for a building 100 x 100 ft. for the manufacture of handles.

The Crescent Forge & Shovel Company, Havana, Ill., has increased its capital stock from $45,000 to $75,000, and is adding new buildings and installing new machinery.

Miscellaneous.

The Thompson-Durkee Company has been organized at Boston to carry on the business formerly conducted by Peck Bros. & Co. The officers are: President and treasurer, R. D. A. Thompson; vice-president, C. H. Seabury, and secretary, G. W. Durkee. The company has opened a warehouse at 87-89 High street, and is supplying to the trade the plumbers' supplies and specialties which were formerly handled by Peck Bros. & Co., who have withdrawn from the Boston market.

The city of Port Washington, Wis., has let initial contracts for the installation of a complete water works system in that city. Contracts were awarded last week as follows: For the laying of mains, to the Des Moines Bridge & Iron Company, $8916.89; hydrants and valves, Rensselaer Mfg. Company, New York, $2102.15; pipes and castings, United States Cast Iron Pipe & Foundry Company, Chicago, $19,908.70; building intake 2800 ft. out into Lake Michigan, $12,000. The contracts for the standpipe, power house, engines and pumps will be awarded some time in the near future. Work will commence within 45 days.

The Collier-Keyworth Company, Gardner, Mass., is a new corporation organized under Massachusetts laws to manufacture chairs, children's carriages and carriage gears. The capital stock is $50,000 and the officers as follows: President, David R. Collier; treasurer and clerk, George A. Keyworth; directors, these officers and C. F. Richardson, T. B. Dunn and H. A. Tuttle. The company states that in the beginning it will manufacture only the gears and wheels for baby carriages. The machinery has practically been bought and manufacturing will begin about September 1. Mr. Collier has for 10 years been head of the carriage gear department of the Heywood Bros. & Wakefield Company, Gardner, and Mr. Keyworth has been lumber buyer for the same company for an equal length of time.

The Westfield Power Company, Westfield, Mass., has prepared plans for a three-story brick building, 56 x 76 ft., which will be occupied by the New England Whip Company, which is already a tenant of the company. The building will be equipped with sprinkler system and will cost $20,000 complete.

The Robbins, Buzzell & Corcoran Company, Boston, is establishing a new brass foundry business at 262 Dover street.

The Hartford Faience Company, Hartford, Conn., manufacturer of special faience, faience mantels, terra vitæ tile and electrical porcelain, is to build a large addition to its works. No new machinery will be required.

For some weeks the plant of the Parlin & Orendorff Company, Canton, Ill., has been shut down for inventory and repairs. During that time many of the departments were equipped with additional machinery and the capacities increased. Plans are under way for building extensions to some of the buildings. On Thursday, July 5, the plant was placed in operation.

The No. 4 Open Hearth Plant at Homestead Started.—On Monday, July 9, the first melt was made in the new No. 4 open hearth plant at the Homestead Works of the Carnegie Steel Company. This new department contains 10 50-ton furnaces, the main building containing these furnaces being 830 ft. long by 137 ft. wide. The new plant is located on the site of the old park and is connected with the Homestead Works proper by two elevated tracks over the Pennsylvania Railroad and by a subway under the same road. It was erected in the record breaking time of 175 days from the time ground was broken and is now practically complete. It is expected that the entire 10 furnaces will be in operation within a week.

Dutch newspapers state that V. A. Hillen & Co., Utrecht, Holland, will manufacture steel rails. The firm has asked the Dutch Government to give it preference as representing a national industry, and the Government has asked buyers of rails to prefer the domestic works in placing orders.

The twenty-sixth annual convention of the American Water Works Association was held in Boston this week, the opening session taking place on Tuesday.

Just 193 days after it sailed from Solomon's Island, Chesapeake Bay, the great dry dock Dewey arrived at Olongapo, P. I., July 10, having safely finished its perilous voyage of more than 12,000 miles.

The Iron and Metal Trades

The monthly Pig Iron returns collected by *The Iron Age* show that the blast furnaces of the country, what with poor working in June and a steady crop of blowings out, are still falling behind in production. Our statistics of the coke and anthracite furnaces for June, 30 days, show an output of 1,970,733 tons, as against 2,098,746 tons in the 31 days of May and 2,073,222 in the 30 days of April. Thus each succeeding month shows a smaller daily rate of production. The weekly capacity of the 290 furnaces active on July 1 was 460,490 tons, as against 472,622 for 296 furnaces on June 1.

It is characteristic of the situation in Steel Making Irons that the holiday shutdown at the Steel plants gave a very welcome chance to accumulate Pig Iron. The scarcity is most pronounced in Bessemer Pig in the Central West. In the East Steel makers are pretty well covered for their requirements for the third quarter and are not seriously considering purchases for the last quarter.

The general tone of the reports throughout the country with reference to the market in Foundry Iron is encouraging and shows a firmer feeling. In the Eastern markets the local furnaces are meeting competition for such business as is not dependent upon specific brands.

While some large Steel Rail business for next year is pending, actual sales during the past week have not been large. Some figuring is going on over an additional 50,000-ton order for the Grand Trunk Pacific road, but it is rather doubtful whether any of the mills on this side of the line will be able to do anything with it. Negotiations are still pending on the large orders for Rails for Cuba and South America.

The Structural shops are getting in a good deal of work. The American Bridge Company has booked 25,000 tons for the new Gary Steel plant and this is to be followed later on with 15,000 to 18,000 tons for the new rail mill. An Ohio road has placed 8000 tons for four bridges, and the Illinois Central has ordered 3000 tons. The Western Pacific is receiving bids on 6000 tons of Bridge Material.

Warned by the experiences of this season and encouraged by the outlook, the Western agricultural implement manufacturers have resumed work at their plants to make stock for the 1907 season. So early a start is unprecedented and is bringing to the mills early specifications. The situation in Steel Bars is now thoroughly sound, the mills having very large commitments and receiving specifications liberally.

Reports from the lighter lines, Wire, Tubes, Sheets, &c., are favorable throughout.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	July 10, 1906.	July 3, 1906.	June 13, 1906.	July 12, 1905.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	*$18.25*	$18.25	$18.50	$16.00
Foundry No. 2, Southern, Cincinnati	*16.00*	16.00	16.75	13.50
Foundry No. 2, Local, Chicago	18.25	18.00	18.25	16.00
Bessemer, Pittsburgh	18.10	18.35	18.10	14.85
Gray Forge, Pittsburgh	16.35	16.35	16.35	14.60
Lake Superior Charcoal, Chicago	19.00	19.00	19.00	16.50
BILLETS, RAILS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	**27.00**	27.00	26.50	21.00
Forging Billets, Pittsburgh	**33.00**	33.00	32.00	24.00
Open Hearth Billets, Phila	29.00	29.00	29.00	26.00
Wire Rods, Pittsburgh	34.00	34.00	34.00	32.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
O. Steel Rails, Chicago	14.00	14.00	14.00	13.00
O. Steel Rails, Philadelphia	*15.75*	16.00	16.25	15.00
O. Iron Rails, Chicago	21.25	21.25	21.25	17.50
O. Iron Rails, Philadelphia	*20.00*	20.00	20.50	18.00
O. Car Wheels, Chicago	18.00	18.00	18.00	14.25
O. Car Wheels, Philadelphia	*16.00*	16.75	16.75	14.00
Heavy Steel Scrap, Pittsburgh	15.75	15.50	15.75	14.00
Heavy Steel Scrap, Chicago	13.00	13.00	13.00	12.25
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	1.63½	1.63½	1.63½	1.63½
Common Iron Bars, Chicago	1.66½	1.66½	1.66⅓	1.45
Common Iron Bars, Pittsburgh	1.50	1.50	1.50	1.55
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64⅓	1.64½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.50
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Beams, Pittsburgh	1.70	1.70	1.70	1.60
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Angles, Pittsburgh	1.70	1.70	1.70	1.60
Skelp, Grooved Steel, Pittsburgh	1.57½	1.57½	1.57½	1.50
Skelp, Sheared Steel, Pittsburgh	1.60	1.60	1.60	1.55
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.40	2.40	2.40	2.15
Cut Nails, Pittsburgh	1.75	1.75	1.75	1.80
Wire Nails, Pittsburgh	1.85	1.85	1.85	1.80
Barb Wire, Galv., Pittsburgh	2.30	2.30	2.30	2.25
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Copper, New York	*18.50*	18.50	18.75	15.00
Spelter, St. Louis	*5.85*	5.87½	6.00	5.17½
Lead, New York	*5.80*	5.85	6.00	4.55
Lead, St. Louis	*5.70*	5.80	5.92½	4.50
Tin, New York	*36.00*	39.20	38.87½	31.40
Antimony, Hallett, New York	*23.00*	23.00	25.00	13.00
Nickel, New York	**45.00**	45.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	$3.94	$3.94	$3.94	$3.74

Chicago.

FISHER BUILDING, July 11, 1906.—(*By Telegraph.*)

Implement plants throughout this territory are now resuming operations at their capacity, manufacturing stock for 1907 consumption, and local mills have received unusually heavy specifications during the week for the immediate shipment of all kinds of finished material. The resumption of these works during July is unprecedented, and the shortage of agricultural machinery that confronted the manufacturers during the season which has just come to a close, coupled with the favorable crop conditions, points to record breaking sales next year. Specifications that are being received by the Illinois Steel Company show an increase of 3000 to 4000 tons weekly over this period last year, and mills continue hard pressed for the delivery of all grades of Finished Material. The railroads continue to figure prominently as buyers of Rails, Track Supplies and Finished Material. One Ohio road has placed a contract for four bridges for erection this year, requiring 8000 tons of Steel, and a Western road is in the market for 35,000 tons of Rails for 1907 shipment. The Rail mill of the Illinois Steel Company at South Chicago is again in operation after a six-day shutdown for improvements and repairs, and the output will be materially increased as the result of the changes that have been made. The recent heavy Pig Iron buying movement is practically at an end, although the International Harvester Company purchased 4000 tons of Malleable Bessemer for early delivery, and is negotiating for 5000 tons additional. Inquiries have also been made by this company for 10,000 tons of Southern Iron for September shipment, but no purchases have yet been made.

Pig Iron.—Southern furnace operators are now demanding a reduction in freight rates on Iron for shipment into this

territory. They claim that the last advance of 25 cents was unwarranted, and are insisting on a lowering of the rate 50 cents a ton. It is doubtful if this can be secured, although they are sanguine that the $3.65 tariff will shortly be re-established. Reports of stock at Southern furnace yards place the total, including warrants, at 63,400 tons, and as these figures have been secured from reliable sources they indicate an unusually strong situation and the maintenance of the present level of values for some time at least. It is conservatively estimated that during the recent buying movement Alabama stacks disposed of 250,000 tons of Pig Iron for last half delivery, a large portion of which was sold in this market. Northern grades have been advanced during the week, local furnaces quoting No. 2 at $18.25 to $18.50 delivered, Chicago. Malleable Bessemer, on account of the recent advances made by Ohio operators, is also higher, and is quoted at $18.50. Southern Iron is firm at $13.50, Birmingham, for No. 2, and off grades are scarce at concessions of 25 cents a ton. We quote as follows, f.o.b. Chicago.

Lake Superior Charcoal	$19.00 to $19.25
Northern Coke Foundry, No. 1	18.75 to 19.00
Northern Coke Foundry, No. 2	18.25 to 18.50
Northern Coke Foundry, No. 3	17.75 to 18.00
Northern Scotch, No. 1	19.25 to 19.50
Ohio Strong Softeners, No. 1	18.80 to 19.05
Ohio Strong Softeners, No. 2	18.30 to 18.55
Southern Coke, No. 1	17.65 to 17.90
Southern Coke, No. 2	17.15 to 17.40
Southern Coke, No. 3	16.65 to 16.90
Southern Coke, No. 4	16.15 to 16.40
Southern Coke, No. 1 Soft	17.65 to 17.90
Southern Coke, No. 2 Soft	17.15 to 17.40
Southern Gray Forge	15.90 to 16.15
Southern Mottled	16.65
Malleable Bessemer	18.25 to 18.50
Standard Bessemer	19.30 to 19.55
Jackson Co. and Kentucky Silvery, 6 %	20.30 to 20.80
Jackson Co. and Kentucky Silvery, 8 %	21.30 to 21.80
Jackson Co. and Kentucky Silvery, 10 %	23.30 to 23.80

(*By Mail.*)

Billets and Rods.—The demand for Forging Billets for prompt delivery continues very heavy, and shipments to meet these requirements continue to be made from Eastern mills at prices ranging from $34 to $35 net ton, f.o.b. Chicago. Both Bessemer and Open Hearth Rods are in active demand and are held at $35 to $36, Chicago.

Rails and Track Supplies.—Improvements made to the Rail mill of the Illinois Steel Company during a six-day shutdown last week are expected to materially increase the output. The demand for Track Supplies for 1907 delivery is unusually heavy and large contracts are being placed with Western mills. The American Steel & Wire Company this week has advanced prices on Track and Boat Spikes to 2.05c., Cleveland, equivalent to 2.17½c., Chicago. Quotations are as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.25c. to 2.35c.; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. sections, $28 to $29; 25-lb., $30; 20-lb., $30 to $31; 16-lb., $31 to $32; 12-lb., $32 to $33, and lighter sections down to 8-lb., $38 to $40, f.o.b. mill. Standard Sections are unchanged at $28, f.o.b. mill, full freight to destination.

Structural Material.—The American Bridge Company this week was awarded the contract for the Steel requirements of the new power house to be erected at Gary, Ind., by the Indiana Steel Company, aggregating 2000 tons. Specifications for the company's new office building are now in the hands of contractors and awards will shortly be made. Considerable railroad bridge work for erection next year is now being figured upon and some heavy contracts will shortly be awarded. Quotations are unchanged, as follows: Beams and Channels, 3 to 15 in., inclusive, 1.86½c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.86½c.; larger than 6 in. on one or both legs, 1.96½c.; Beams, larger than 15 in., 1.96½c.; Zees, 3 in. and over, 1.86½c.; Tees, 3 in. and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work.

Plates.—Specifications for Sheared Plates are improving from week to week and practically none of the mills is in position to make deliveries in less than 30 days. Slight premiums are being paid on Universal Mill Plates for prompt delivery, although on contracts ruling quotations obtain. We continue to quote: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 in., 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 in., 1.86½c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.20c.; 72 in. wide, 2.35c. to 2.45c.; No. 8, up to 60 inches wide, 2.15c. to 2.25c.; Flange and Head quality, 25c. extra.

Sheets.—An early advance on both Black and Galvanized Sheets is anticipated as a result of the recent increase in the cost of raw material, and deliveries, on account of the large contracts that were recently placed, cannot be made in less than 90 days. Car lot orders are being freely received by large distributers and premiums obtain on this prompt business. We quote as follows: Blue Annealed, No. 10, 1.91½c.; No. 12, 1.96½c.; No. 14, 2.01½c.; No. 16, 2.11½c.; Box Annealed, Nos. 17 to 21, 2.41½c.; Nos. 22 to 24, 2.46½c.; Nos. 25 to 26, 2.51½c.; No. 27, 2.56½c.; No. 28, 2.66½c.; No. 29, 2.81½c.; No. 30, 2.91½c. Galvanized Sheets, Nos. 10 to 14, 2.61½c.; Nos. 15 and 16, 2.81½c.; Nos. 17 to 21, 2.96½c.; Nos. 22 to 24, 3.11½c.; Nos. 25 and 26, 3.31½c.; No. 27, 3.51½c.; No. 28, 3.71½c.; No. 30, 4.21½c. Sheets from store, Blue Annealed, No. 12, 2.15c. to 2.25c.; No. 14, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Box Annealed, Nos. 18 to 20, 2.60c. to 2.70c.; Nos. 22 to 24, 2.65c. to 2.75c.; No. 26, 2.70c. to 2.80c.; No. 28, 2.85c. to 2.95c.; No. 30, 3.25c. to 3.35c. Galvanized from store, Nos. 10 to 20, 3.10c. to 3.20c.; Nos. 22 to 24, 3.35c. to 3.45c.; No. 26, 3.45c. to 3.55c.; No. 27, 3.55c. to 3.75c.; No. 28, 3.85c. to 3.95c.; No. 30, 4.45c. to 4.55c.

Bars.—Agricultural implement plants throughout this district have again resumed operations in full and in consequence heavy specifications are being received by the mills for both Steel and Iron Bars, one large manufacturer having made specifications on an assorted lot of 2000 tons of Steel Bars the past few days. Notwithstanding the low prices that are prevailing for Scrap, agreed quotations on Iron Bars are being firmly maintained and no concessions have been reported. We quote as follows: Iron Bars, 1.66½c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.06½c., extras as per Hoop card; Bands, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.66½c., half extras. Store prices are as follows: Bar Iron, 2.10c.; Steel Bars, 1.85c., and as high as 2c. is asked on certain scarce sizes; Steel Bands, 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.30c. to 2.40c., full extras.

Merchant Pipe.—Large jobbers are now contracting with the mills for their future requirements, and the tonnages, without exception, show a slight increase over the purchases made during the first half of the year. The market is now firmly established on the basis of 81 and 5 off the list, Pittsburgh, and we revise discounts in car lots, Chicago, as follows: Black Steel Pipe, 79.35 per cent. on the base sizes, ¾ to 6 in., and Galvanized, 69.35 per cent. Iron Pipe is quoted from 1½ to 2 points higher. From store in small lots Chicago jobbers are quoting 76½ to 77 per cent. on Black Steel Pipe, ¾ to 6 in.

Boiler Tubes.—While some concessions are reported on Tubes from store, shading on the part of the mills has almost entirely disappeared, indicating that a large tonnage was booked at the low prices that have been prevailing recently. Discounts on base sizes, 2¾ to 5 in., in car lots, are as follows: Steel Tubes, 68.35; Iron, 55.35; Seamless, 50.35; 2½-in. and smaller and lengths over 18 ft., and 2½-in. and lengths over 22 ft., 10 per cent. extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1¼ in.	40	35	42½
1¾ to 2¼ in.	50	35	35
2½ in.	52½	35	30
2¾ to 5 in.	60	47½	42½
6 in. and larger	50	35	..

Cast Iron Pipe.—Contracts for 500 tons of Pipe were awarded the United States Cast Iron Pipe & Foundry Company by the city of Mt. Carmel, Ill., and 600 tons were received from Pt. Washington, Wis. The city of Dayton, Ohio, is in the market for 2500 tons of high pressure Pipe for fire service. Prices are firm and unchanged, as follows: Water Pipe, 4-in., $32.50; 6, 8, 10 and 12 in., $31.50; over 12-in., $30.50, with $1 extra for Gas Pipe. Large municipal contracts would take the above basis.

Merchant Steel.—On account of the resumption of the implement plants throughout the West, heavy specifications are being received by the mills on Plates, Shafting and all grades of Merchant Steel. Little new business is being placed, inasmuch as contracts for future requirements were closed some time ago. Prices are unchanged, as follows: Planished or Smooth Finished Tire Steel, 1.86½c.; Iron Finish, up to 1½ x ½ in., 1.81½c.; Iron Finish, 1½ x ½ in. and larger, 1.66½c., base; Channels for solid rubber tires, ¾ to 1 in., 2.16½c., and 1⅛-in. and larger, 2.06½c.; Smooth Finished Machinery Steel, 1.91½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.96½c.; Cutter Shoe, 2.35c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c., and still higher prices are asked on special grades. Shafting, 50 per cent. off in car lots and 45 per cent. in less than car lots, in base territory.

Coke.—Prices show considerable variation from week to week on account of consignments, which are not offered with any degree of regularity. On account of the heavy demands for Furnace Coke the offerings in this market are not as large as during the past month, and slightly higher prices are prevailing on Foundry grades. We quote 72-hr. Connellsville at $2.85 to $3 at the ovens, equivalent to $5.50 to $5.65, Chicago, and By-Product Coke continues to be quoted at the latter figure.

Old Material.—Notwithstanding the dull market and the refusal of consumers to purchase regardless of the low prices that are prevailing, railroad offerings continue heavy, the Atchison, Topeka & Santa Fé this week offering a list of 3500 tons of material. The foundries throughout this district are buying sparingly, and as practically all of the Iron mills loaded up on the recent decline, prices are soft. We continue quotations on gross tons, car lots, f.o.b. Chicago, as follows:

Old Iron Rails	$21.25 to $21.50
Old Steel Rails, 4 ft. and over	15.50 to 16.00
Old Steel Rails, less than 4 ft.	14.00 to 14.50
Heavy Relaying Rails, subject to inspection, 50 pounds and under	27.00 to 27.50
Old Car Wheels	18.00 to 18.50
Heavy Melting Steel Scrap	13.00 to 13.50
Frogs, Switches and Guards	13.00 to 13.50
Mixed Steel	11.00 to 11.50

The following quotations are per net ton:

Iron Fish Plates	$16.00 to $16.50
Iron Car Axles	22.00 to 22.50
Steel Car Axles	18.00 to 18.50
No. 1 Railroad Wrought	13.50 to 14.00
No. 2 Railroad Wrought	12.50 to 13.00
Railway Springs	13.00 to 13.50
Locomotive Tires, smooth	14.00 to 14.50
No. 1 Dealers' Forge	11.00 to 11.50
Mixed Busheling	9.00 to 9.25
Iron Axle Turnings	9.00 to 9.50
Soft Steel Axle Turnings	8.75 to 9.00
Machine Shop Turnings	8.75 to 9.00
Cast Borings	7.00 to 7.50
Mixed Borings, &c	7.00 to 7.50
No. 1 Mill	8.50 to 9.00
No. 2 Mill	7.50 to 8.00
No. 1 Boilers, cut to Sheets and Rings	9.50 to 10.00
No. 1 Cast Scrap	13.50 to 14.00
Stove Plate and Light Cast Scrap	11.00 to 11.50
Railroad Malleable	13.50 to 14.00
Agricultural Malleable	12.50 to 13.00

Metals.—The only change in the price of Metals this week is in Tin, where a decline of 1½c. per lb. has taken place, following the fluctuation in values in New York and foreign markets. Nearly all consumers have covered their requirements in Copper for the present month and August and buying is practically entirely limited to small lots. There is little disposition to buy Copper for more extended delivery than August, users endeavoring to size up the future situation before placing orders. Purchases of Spelter are on a small lot basis, but prices remain fairly firm and unchanged. We quote: Casting Copper, 18¾c. to 18⅞c.; Lake, 18⅞c. to 19¼c., in car lots; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 39½c. to 40c.; small lots, 40½c. to 41c.; Spelter, prompt delivery, 6.15c. to 6.25c., for car lots; Lead, Desilverized, 6.07½c. to 6.15c., for 50-ton lots; Corroding, 6.57½c. to 6.67½c., for 50-ton lots; on car lots, 2¼c. per 100 lb. higher; Cookson's Antimony, 28c., and other grades, 26c. to 27c.; Sheet Zinc is $7.75 list, f.o.b. Laselle, in car lots of 60-lb. casks. On Old Metals we quote: Copper Wire, 16¾c.; Heavy Copper, 16¼c.; Copper Bottoms, 15½c.; Copper Clips, 15¾c.; Red Brass, 15½c.; Red Brass Borings, 13¾c.; Yellow Brass, 12¼c.; Yellow Brass Borings, 10¼c.; Light Brass, 8¾c.; Lead Pipe, 5½c.; Tea Lead, 5c.; Zinc, 5c.; Pewter, No. 1, 24c.; Tin Foil, 32c.; Block Tin Pipe, 27½c.

Cincinnati.

FIFTH AND MAIN STS., July 11, 1906.—(*By Telegraph.*)

Pig Iron.—The market apparently has a firm tone, although there has been no well defined buying movement manifest. What business has come forward has been more in the nature of small lots, with here and there a buyer who had in contemplation the remainder of the year's requirements. The situation is such that it is a difficult matter to determine the exact relations between the buyer and seller, and while it may be truthfully stated that considerable Iron found its way from the yards of the furnaces to the consumer during the temporary decline a week or two since, it is at the same time reasonable to conclude that the number of consumers who bought at that time, compared with the immense interests throughout the country who have yet to cover for the remainder of the year, is exceedingly small. We are told that several of the large Southern producers are firm on a $13.50, Birmingham, basis. As a matter of fact, however, the bulk of the business appears to be going on a $13 basis, which probably represents the situation as nearly as can be determined. Northern brands are reported strong, with the available supply somewhat restricted, and prices ranging from $16 to $16.50, at furnace. One of the large Cast Iron Pipe companies is said to have bought quite a large tonnage during the week for early delivery. Freight rates from the Hanging Rock district to Cincinnati are $1.15 and from Birmingham $3. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$16.50 to $17.00
Southern Coke, No. 2	16.00 to 16.50
Southern Coke, No. 3	15.50 to 16.00
Southern Coke, No. 4	15.00 to 15.50
Southern Coke, No. 1 Soft	16.50 to 17.00
Southern Coke, No. 2 Soft	16.00 to 16.50
Southern Coke, Gray Forge	14.75 to 15.25
Southern Coke, Mottled	14.25 to 14.75
Ohio Silvery, No. 1 (8 per cent. Silicon)	21.65 to 22.15
Lake Superior Coke, No. 1	17.65 to 18.15
Lake Superior Coke, No. 2	17.15 to 17.65
Lake Superior Coke, No. 3	16.65 to 17.15

Car Wheel Irons.

Standard Southern Car Wheel	$24.00 to $24.25
Lake Superior Car Wheel	22.50 to 22.75

Coke.—The market is quite strong and prices are firm. Considerable tonnage has been contracted for during the week, covering yearly requirements. We quote the best Connellsville and Virginia Foundry brands from $2.75 to $3, f.o.b. ovens.

Finished Iron and Steel.—The demand along Structural lines continues good, and while possibly lighter than some months since, is fairly satisfactory. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.63c., with half extras; the same, in smaller lots, 2c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in small lots, 1.85c., with full extras; Base Angles, 1.83c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-in. and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16 gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14 gauge, in carload lots, 2.05c.; in small lots, 2.60c.; Steel Tire, 1 x ¼ in. or heavier, 1.83c., in carload lots.

Old Material.—A little better tone is said to prevail, with sales more active. Dealers, however, are far from satisfied with conditions and hope for a change. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $14 to $14.50 per net ton; Cast Borings, $5 to $6 per net ton; Steel Turnings, $7 to $8 per net ton; No. 1 Cast Scrap, $12 to $13 per net ton; Iron Rails, $19 to $20 per gross ton; Steel Rails, rolling mill lengths, $14 to $15 per gross ton; Relaying Rails, 56 lbs. and upward, $28 to $29 per gross ton; Iron Axles, $21 to $22 per net ton; Car Wheels, $17 to $18 per gross ton; Low Phosphorus Scrap, $18 to $19 per gross ton.

Pittsburgh.

PARK BUILDING, July 11, 1906.—(*By Telegraph.*)

Pig Iron.—Sales of Bessemer and Basic Pig Iron in the past week have been light, due to the fact that prompt Bessemer and Basic are very scarce and also because leading consumers are pretty well covered to October. The Bessemer Pig Iron Association has a limited tonnage of Bessemer for delivery in August and September, and this will likely go to the Steel Corporation at $17.25, Valley Furnace. For July delivery Bessemer Iron in small lots readily brings $17.75, Valley furnace. For third quarter delivery Bessemer is held at $17.25 to $17.50, Valley furnace, while Basic is firm at $17, Valley furnace. A leading Pipe interest has bought upward of 20,000 tons of Southern Foundry, on the basis of $13.25 to $13.50, Birmingham, for No. 2. There is a fairly active inquiry for Foundry Iron and consumers who have Iron bought are urging the furnaces for shipments. We quote Northern makes of Foundry Iron at $16.25 to $16.50 for No. 2, Valley furnace. There is some inquiry for Forge Iron, two local consumers having bought nearly 4000 tons recently, on the basis of about $16.50, Pittsburgh. We quote Northern Forge at $15.50 to $15.65, furnace, or $16.35 to $16.50, Pittsburgh.

Steel.—There is a continued shortage in the supply of Billets and Bars, and the market is very firm. We quote Bessemer Billets at $27 to $27.50 and Open Hearth Billets at $28 to $28.50, Pittsburgh. We note a sale of 500 tons of 4 x 4 in. Open Hearth Billets at $28.50, Pittsburgh. Sheet and Tin Bars in 30-ft. lengths are $29, Pittsburgh, an advance of 50c. a ton being charged on Cut Bars.

(*By Mail.*)

The scarcity of Bessemer and Basic Pig Iron and Bessemer and Open Hearth Steel continues to be a leading feature of the market, and it will probably be September or October before the shortage is relieved. The output of Bessemer Iron for delivery up to September is pretty well under contract, but the Bessemer Pig Iron Association has a limited tonnage to sell for August and September, which will probably be taken by the Steel Corporation, negotiations for the purchase of this Iron now being under way. We note a better inquiry for Foundry Iron, and a local consumer bought a round tonnage. There is also more inquiry for Forge Iron, two local interests having bought. The scarcity of Bessemer Iron has become so pronounced that the Carnegie Steel Company has turned to heavy Steel Scrap and has

bought largely of this material in the past two weeks, taking 15,000 tons from one large Steel works. The shut down of a number of finishing mills on July 1, for inventory, repairs and wage scale adjustments, has brought some relief to the Steel mills, which are still very much behind in deliveries of Billets, Sheet and Tin Bars. Bessemer Billets readily command $27.50 and Open Hearth Billets $28.50 to $29, Pittsburgh. The demand for Finished Iron and Steel holds up remarkably well, and in such lines as Steel Plates and Steel Bars is heavier now than a month or two ago. In fact, leading interests like the Carnegie Steel Company, Jones & Laughlin Steel Company and others report the tonnage on their books at present fully as heavy as at any time this year. If the present strong situation in Steel making Irons and in Steel is maintained, and it gives every promise of being held, it would seem that present conditions in Finished Iron and Steel will hold for the balance of this year. In fact, the situation in the Iron trade to-day is stronger in every way than it was a month or six weeks ago, when the demand for finished material fell off to some extent and created a little apprehension. This has been removed by the heavy increase in tonnage in Plates, Bars and other materials and the outlook for the balance of this year is very bright. The demand for Coke is heavier than for some time and it is bringing better prices.

Ferromanganese.—We note a continued shortage in the supply of Ferro for prompt shipment, 80 per cent. foreign for July and August delivery being held at $90 to $95, Pittsburgh. A sale of about 40 tons for July delivery is reported at the latter price. For delivery commencing September, foreign Ferro is held at about $85, Pittsburgh.

Muck Bar.—There are several inquiries in the market and some tonnage is expected to be put through this week. We quote best grades of Muck Bar made from all Pig Iron at $28.50, Pittsburgh.

Wire Rods.—The demand is quiet, but prices are firm. We quote Bessemer and Open Hearth Rods at $34, Pittsburgh.

Skelp.—There is some inquiry in the market for Sheared Iron Skelp, and prices are firm. We quote: Grooved Steel Skelp, 1.57½c. to 1.60c.; Sheared Steel Skelp, 1.60c. to 1.65c.; Grooved Iron Skelp, 1.65c. to 1.70c.; Sheared Iron Skelp, 1.75c. to 1.80c., Pittsburgh, these prices being for ordinary widths and gauges.

Steel Rails.—Contracts taken by the Carnegie Steel Company during the week include 10,000 tons for the Chicago, Burlington & Quincy for this year delivery, this being the first time in six years that this road has bought Rails as far east as Pittsburgh, and the sale reflects the crowded condition of the order books of the Illinois Steel Company. The Erie Railroad is in the market for 16,000 tons for this year delivery, and the business will be placed this week. It is estimated that the total Rail business for 1906 will aggregate about 3,600,000 tons. The Rail mills, aside from the Colorado and the Tennessee, have booked fully 3,000,000 tons so far. The Carnegie Steel Company expects to carry over not less than 100,000 tons into next year. We quote Standard Sections at $28 at mill, actual freight to destination being added. There is a very active demand for Light Rails, which are firm. We quote Light Rails as follows: 8-lb., $37; 10-lb., $33; 12-lb., $31; 16-lb., $30; 20-lb., $29.50; 25 to 45 lb., $28.50 to $29, maker's mill.

Structural Material.—No large contracts have been placed in this district in the past week, but there is a steady flow of small work which aggregates considerable tonnage. The Structural concerns are practically filled up for the balance of this year, and are entering tonnage for next year. The mills are still somewhat behind on contracts, but deliveries are better than for some time. Prices are firm, as follows: Beams and Channels, up to 15-in., 1.70c.; over 15-in., 1.80c.; Angles, 3 x 2 x ¼ in. thick up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3-in. and larger, 1.70c.; Tees, 3-in. and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-in. are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—New tonnage in Plates continues heavy, the Carnegie Steel Company and Jones & Laughlin Steel Company having taken some large contracts for Sheared Plates for Pipe lines and Oil Tanks. The demand from the Boiler trade is also quite heavy, and the Plate mills have more tonnage on their books than for some time. Prices are fairly strong, but are sometimes shaded to the extent of $1 to $2 a ton on the narrow widths. We quote: Tank Plates, ¼ in. thick, 6¼ in. up to 100 in. in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edge	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within 10 days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Sheets.—The Sheet mills that shut down July 1 for inventory and repairs are gradually getting started, but are still up against a shortage in Sheet Bars and cannot run full time. The mills have a heavy tonnage on their books for forward delivery, while buyers are specifying very freely on contracts. On certain sizes some mills cannot make deliveries before September or later. Prices are firm, as follows: Nos. 10 and 12 gauge, 1.75c. to 1.80c.; Nos. 13 and 14, 1.85c.; Nos. 15 and 16, 2c.; Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.65c., and No. 30, 2.75c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.80c., and No. 30, 4.05c. We quote No. 28 Gauge Painted Roofing Sheets at $1.75 per square, and Galvanized Roofing Sheets, No. 28 Gauge, at $3.10 per square for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances for small lots from store.

Iron and Steel Bars.—Many of the mills rolling Iron and Steel Bars closed down July 1 for inventory and repairs, but will get started again July 16. The tonnage of Steel Bars being placed with the mills is heavier than for some time, and it is strongly stated that the present price of 1.50c. will be maintained absolutely in the future, no concessions whatever to be allowed. The tonnage in Iron Bars is of fair volume, but buyers are placing orders mostly for nearby requirements, not being disposed to contract ahead. We quote Iron and Steel Bars at 1.50c. base, half extras for carloads and larger lots.

Hoops and Bands.—New business being placed is light, the mills running mostly on specifications on contracts, which are coming in freely. We quote Steel Hoops at 1.90c. and Bands for all purposes at 1.50c., base, half extras, as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of $2 a ton being charged for less than carloads.

Tin Plate.—All the large consumers of Tin Plate covered their requirements some time ago and the new business being placed now is mostly for small lots. The Tin Plate mills are pretty well sold up to October or later, and shipments by the mills on these contracts are heavy. We quote Tin Plate at $3.75 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in ten days, on which price a rebate of 5c. a box is allowed for carloads and larger lots.

Railroad Spikes.—We note a continued heavy demand, the mills making Spikes having their product sold up for the next three or four months. One local mill is out of the market as a seller, being sold up to October. We quote Railroad Spikes at $2.20 to $2.25 per 100 lbs., f.o.b. Pittsburgh.

Merchant Steel.—Specifications from the implement trade on contracts are fairly heavy, but the amount of new business being placed is light. Prices are unchanged, as follows: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ in., 1.65c., and Iron Finish, 1½ x ½ in. and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 in., 2c., and 1⅛-in. and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.75c. to 1.80c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. We quote Cold Rolled Shafting at 50 per cent. discount in carloads and 45 per cent. in less than carloads, delivered in base territory.

Spelter.—The market is quiet, but prices are fairly strong. We quote prime grades of Western Spelter at 5.85c. to 5.90c., St. Louis, equal to 5.97½c. and 6.02½c., Pittsburgh.

Merchant Pipe.—Contracts placed during the week include 10 miles of 16-in. Line Pipe for the Ohio Fuel Supply Company, the business going to a local mill. Some other large lines are being figured on, one of which will likely be given out this week. The general demand for Merchant sizes of Pipe is active, practically all of the mills being filled up for the next two or three months. Prices are unchanged, the extreme discount on Merchant sizes of Steel Pipe remaining at 81 and 5 per cent. off to the large trade. Official discounts for carloads, which continue to be shaded one point or more, are as follows:

Merchant Pipe.

	Jobbers, carloads. Steel. Black. %	Steel. Galv. %	Iron. Black. %	Iron. Galv. %
⅛ and ¼ in	72	56	69	53
⅜ in	74	60	71	57
½ in	76	64	73	61
¾ to 6 in	80	70	77½	67½
7 to 12 in	75	60	72½	57
Extra strong, plain ends:				
⅛ to ⅜ in	65	53	62	50
½ to 4 in	72	60	69	57
4½ to 8 in	68	56	65	53
Double extra strong, plain ends:				
½ to 8 in	61	50	58	47

Boiler Tubes.—New business in Locomotive and Merchant Tubes is fairly active, but it is stated that even the low discounts now ruling are sometimes shaded by a few of the mills. Discounts in carloads are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in	45	50
1¾ to 2¼ in	45	62
2½ in	50	64
2¾ to 5 in	57	70
6 to 13 in	45	62

Iron and Steel Scrap.—The scarcity of Bessemer Iron for prompt shipment has compelled some of the large Steel interests to turn to the use of Steel Scrap for relief, and the Carnegie Steel Company has been a heavy purchaser, taking 15,000 tons from one local Steel interest, and also making large purchases from dealers. These transactions have naturally had the effect of strengthening prices on Heavy Steel Scrap, which are firmer now than for some time, and it is held at $15.75 to $16, Pittsburgh. Other grades of Scrap are quoted as follows: Bundled Sheet Scrap, $13.75 to $14; No. 1 Wrought Scrap, $17.25 to $17.50; Machinery Cast Scrap, $15.50; Cast Iron Borings, $8.25 to $8.50; Old Steel Rails, short pieces, $15.50 to $15.75; Old Steel Rails, rerollers, $17.25 to $17.50; Axle Turnings, $12.50; Stove Plate, $10.25 to $10.50; Wrought Turnings, $11.50 to $11.75; all in gross tons, f.o.b. Pittsburgh.

Coke.—We note a very active demand for Furnace Coke, a number of contracts having been made recently for deliveries extending over balance of this year. One Steel interest has bought 10 cars a day, commencing with July and running to December. We quote best makes of Connellsville Furnace Coke at $2.50 to $2.60 and 72-hr. Connellsville Foundry Coke at $2.75 to $2.85 a ton at oven. The Bessemer Coke Company has let a contract for the building of 100 ovens at Millsboro, in the Connellsville region.

Philadelphia.

REAL ESTATE TRUST BUILDING, July 10, 1906.

The last half of the year opens very encouragingly as regards the Iron and Steel trades. The demand for Pig Iron is very strong, and as the furnaces have little or nothing unsold for the third quarter the owners naturally demand full quotations, although buyers are not showing any great anxiety, on the ground that even if prices are not going lower they will be able to get all they require at today's figures or something very close to them. The convincing fact in regard to the situation is the continued large consumption. The market would quickly weaken if shipments were held up or if stocks were accumulating, but as the reverse of this has to be dealt with there is little chance for any break in prices. It is true that the capacity for production is much larger than it was a year ago, but most of the old furnaces have been run at a rate that necessitates extensive repairs, so that the net gain in the output has not been important thus far, and it is by no means certain that the furnaces will be able to do much better in the very near future than they have been doing during the past six months. Another strong feature is the large amount of work recently placed for railroad equipment of every description. The shipyards have also been heavy buyers, so that the consumption of Iron and Steel for months to come promises to equal, if not surpass, all former records. The only cloud on the horizon appears to be the unsettled conditions, both financial and political, at home and abroad. Russia is the storm center, although some people apprehend more or less unsettlement here, owing to the approaching elections; but with the promise and realization of large crops there is a fair chance that we can hold our own against all ordinary contingencies. So far neither fire nor earthquake nor money stringency has had much influence, so that the feeling of confidence appears to be growing stronger week by week, and may not be affected by outside influences to the extent that some people apprehend. The present situation is certainly much better than was expected that it would be two or three months ago, and while we may not be entirely out of the woods the feeling has become decidedly more cheerful during the past three or four weeks.

Pig Iron.—There is a remarkably good demand for Pig Iron, although a much heavier business is expected during the next few weeks. There is more inquiry for deliveries during the last quarter of 1906, and in one or two instances large consumers have asked for quotations covering the first quarter of 1907. Order books are lightly covered, compared with this time a year ago, but the atmosphere has not been as bracing as it was at that time, so that consumers have been less inclined to buy for forward deliveries. They have been using as much or more Iron than they did a year ago, and will therefore be forced into the market before long, and as there is little or no unsold Iron for delivery before September sellers will certainly not feel like making concessions. It must be remembered, however, that if consumers have not bought much Iron for the last quarter neither have makers sold much, so that one will be as ready to take hold as the other is. Hence, while there may be a great increase in sales it may not affect prices, but it is regarded as certain that heavy buying will be a feature during the next few weeks. The general character of business is unchanged. Everything goes, although Mill Irons are probably less active than other grades, Steel Making Irons being scarcer than anything else, but while there is great pressure for deliveries it does not appear that there has been enough scarcity to interfere with regular operations either at mills or foundries. Prices are a little less uniform than they were a week ago, some trying to get a little more money, while others are willing to go on at last week's prices, which are about as follows, for Philadelphia and nearby deliveries:

No. 1 X Foundry	$19.00 to $19.25
No. 2 X Foundry	18.25 to 18.50
No. 2 Plain	17.50 to 17.75
Standard Gray Forge	16.25 to 16.50
Ordinary Gray Forge	15.75 to 16.00
Basic	17.50 to 17.70
Low Phosphorus	24.50 to 24.75
Malleable	18.75 to 19.00
Bessemer	19.85 to 20.00
Lake Superior Charcoal	21.00 to 22.00

Steel Alloys.—The market is unsettled and prices are very irregular. The disturbed conditions in Russia make sellers cautious in naming prices for forward delivery, although about $88 to $92 might be done for 80 per cent. Ferromanganese for third quarter and $4 to $5 less for the last quarter. Prices are liable to sudden changes, however, so that the above are merely nominal figures. Spiegel is quoted at about $35 for 20 per cent., seaboard, but no business of recent date can be reported.

Steel.—The demand is well maintained and prices are very strong. Sales of large lots are readily made at $29 to $29.50 for ordinary Open Hearth Steel and $32 to $33 for Forging Steel.

Plates.—The demand keeps up remarkably and mills are full in nearly all their departments. There has been a considerable accession of orders during the past two or three weeks, and it is probable that the aggregate tonnage on the books is the largest on record. The orders cover a wide range of work and are not confined to any particular interest, showing that all branches of business are in first-class condition. Prices are unchanged, as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.73½	1.78½
Flange or Boiler Steel	1.83½	1.88½
Marine	2.13½	2.18½
Locomotive Fire Box Steel	2.23½	2.28½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Extra per 100 pounds.
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Structural Material.—The demand is very satisfactory, although there is no special crowding, as deliveries can be had any time within 60 to 90 days, and sooner still for small lots of the ordinary sizes. The mills are doing very well, however, and prospects for the remainder of the year are considered altogether favorable. Prices are unchanged, as follows: Beams, Angles and Channels, 1.83½c. to 2c., delivered.

Bars.—The feeling in this department is somewhat better, and while the demand is not active yet there are some signs of improvement. The closing of the mills for repairs, &c., has reduced stocks somewhat, and inquiries indicate that new business in fair volume will be forthcoming in the near future. Prices are steady at 1.63½c. to 1.68½c. for either Iron or Steel Bars, and it is said that these figures are well maintained.

Sheets.—The demand keeps up remarkably, and mills report a larger business than they have had for an almost indefinite period. Prices are about as follows for medium sized lots, about a tenth less being asked for mill shipments: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80.

Old Material.—The market is lifeless, with so little doing that it is almost impossible to quote exact prices, as it

depends whether the buyer or seller is most needy. Bids and offers for deliveries in buyers' yards, however, are about as follows:

Scrap Steel Rails and Crops	$15.75 to $16.00
No. 1 Steel Scrap	15.50 to 15.75
Low Phosphorus Scrap	20.00 to 21.00
Old Steel Axles	18.00 to 18.50
Old Iron Axles	24.50 to 25.00
Old Iron Rails	20.00 to 20.50
Old Car Wheels	16.00 to 16.50
Choice Scrap, R. R. No. 1 Wrought	17.00 to 18.00
Choice No. 1 Yard Scrap	15.50 to 16.00
Long and Short	14.50 to 15.00
Machinery Scrap	15.00 to 15.50
Wrought Iron Pipe	12.25 to 12.50
No. 1 Forge Fire Scrap	13.00 to 13.25
No. 2 Light Ordinary	10.00 to 11.00
Wrought Turnings	11.50 to 12.00
Axle Turnings, Choice Heavy	12.00 to 12.50
Stove Plate	10.50 to 11.00
Cast Borings	9.00 to 9.25

Birmingham.

BIRMINGHAM, ALA., July 9, 1906.

Pig Iron.—The Iron market is settling down to about the ordinary grind. Sales the past week have not been anything like as numerous as the week previous, and have been principally of small lots ranging from 100 to 500 tons, although a few sales of more than 1000 tons have been reported. Prices have varied considerably, depending largely upon the location of the customer and the competition it was necessary to meet. One prominent concern states that it has made a number of sales this week at $14, although admitting the ruling price to be $13.50. This latter price, however, could probably be shaded slightly for Southern delivery and considerably for shipment north of the Ohio, if the tonnage was sufficient to warrant it. Certain furnaces report being sold up and out of the market for the remainder of the year on leading brands and grades. This should not be construed to mean that sales have been excessive or that there will not be plenty of Iron for every one, but is due to the fact that experience has shown certain brands of Iron best suited for a particular class of castings, and there is always a scramble for this Iron, even during the dullest times. The holiday the past week interfered somewhat with operations, but the suspension was much less than in former years and all the plants are again working with their accustomed regularity. Very little change in the production of Foundry Iron has been made this week. The Sloss-Sheffield Steel & Iron Company's Philadelphia stack at Sheffield was blown out for relining, but as its Lady Ensley Furnace, which has been undergoing repairs, was blown in the output has been practically unchanged. The No. 2 City Furnace of this company at Birmingham, which has been out of blast since last December, undergoing general repairs, was started on the 3d.

The Shelby Iron Company at Shelby has started its No. 2 stack on Charcoal Iron, after being out of blast for several months, due to scarcity of charcoal. It is the only furnace in the State producing this grade of Iron, and as the demand is good it is bringing fancy prices, a number of sales being reported at $21.

Cast Iron Pipe.—There is no let-up in small orders for Water or Gas Pipe, though no bookings for large tonnage are reported this week. The Cast Iron Soil Pipe people are now in the midst of their season, and all plants in the district are working to their full capacity. Molders are scarce, however, and production is consequently somewhat restricted, with shipments from 30 to 60 days behind. Producers of Water Pipe are quoting approximately as follows, but are unable to promise prompt delivery on certain sizes: 4 to 6 in., $27.50 to $28; 8 to 12 in., $27 to $27.50; over 12-in., $25.50. Gas Pipe $1 per ton extra.

Old Material.—A somewhat better feeling exists in the Scrap market than last week, and while it has been decidedly dull, so far as orders are concerned, dealers are inclined to the opinion that considering the season of the year the market is in a satisfactory condition. Prices are practically unchanged, quotations being about as follows:

Old Iron Rails	$18.50 to $19.00
Old Iron Axles	18.00 to 18.50
Old Steel Axles	16.00 to 17.00
Old Car Wheels	16.50 to 17.00
No. 1 Railroad Wrought	15.00 to 15.50
No. 2 Railroad Wrought	14.50 to 15.00
No. 1 Country Wrought	13.00 to 13.50
No. 2 Country Wrought	11.00 to 11.50
Wrought Pipe and Flues	11.50 to 12.00
Railroad Malleable	12.00 to 12.50
No. 1 Steel	11.00 to 11.50
No. 1 Machinery Cast	11.00 to 11.50
Stove Plate and Light Cast	8.50 to 9.00

Work at the commercial coal mines, which has been suspended this week, will in all probability be resumed at once. At a meeting of the Commercial Coal Operators' Association Saturday an agreement was reached that each individual operator might make such an agreement regarding rules with the United Mine Workers as would best apply to his particular mine. Inasmuch as there has been no dissension with reference to the scale of wages to be paid it is expected that all differences will now be amicably adjusted.

Cleveland.

CLEVELAND, OHIO, July 10, 1906.

Iron Ore.—The statement of the lake Ore tonnage, compiled by the local shippers, was issued the latter part of last week, showing the total for June to be 5,489,256 gross tons, against 4,999,450 tons for June, 1905, the gain being 489,506 tons. The movement away from the head of the lakes up to July 1 amounted to 11,241,596 tons, as compared with 10,814,054 tons for the corresponding period last year, a gain of 427,542 tons. The June figures were somewhat disappointing, although establishing a new record for the lakes, the best previous record having been slightly over 5,200,000 tons. The expectations were that the shipment would approach 6,000,000 tons. All conditions favored such a movement. The car supply in the lower lake region was abundant, not being drawn upon heavily for the Coal trade. The docks were practically free to operate to their full capacity. In the upper lake region a surplus remained on hand at the opening of the month from the vessel strike period, when mines were producing more than they could ship. The lake boats were in abundance for all possible demands and had not been called upon to enter into any other trade, the grain shipments having been about completed and Coal being light. Nothing existed seemingly to place a check upon the Ore movement. That the expected total was not reached is accounted for by the statement that there are not enough miners in the Northwest to produce any more Ore than is being shipped. Mine owners are not willing to bid in the open market for their labor against the manufacturing concerns and the farmers who are in need of labor. Estimated shipments for this month are 5,800,000 tons. In view of the shortage of labor it is a question whether this total will be reached, since the labor market will be shortened by the needs of the farmers through harvesting. It is now thought by some in the trade that the mines will not ship as much as 35,000,000 tons this year, although the estimates even recently made were that the total would be at least 38,000,000 tons. The same increase in the movement of low grade Ores as shown a short time ago is in evidence, the higher grade Ores being scarce and in demand. No sales are reported, but we still quote $4.50 to $4.75, f.o.b. Lake Erie ports, for Old Range Bessemer. Lake rates are steady at 75c. from Duluth, 70c. from Marquette and 60c. from Escanaba.

Pig Iron.—For the time being there is a lull in the Foundry Pig Iron trade. This is probably due to the fact that the supply for spot shipment is practically wiped out in this territory. Most of the immediate needs are still being furnished by Southern stacks. The buying from the South has had the effect of advancing the prices generally to $13.50, Birmingham, for No. 2, to which is added the new freight rate of $4.10 to make up the price in Cleveland. This compares with the prevailing price of $17 in the Valleys for No. 2 Northern Iron. Inquiries are reported for two lots of Iron, 1000 tons each, one lot to be delivered in the third quarter and the other to run through the second half of the year. Northern furnaces are in position to take care of this business, and will probably do so. At present they have little or no spot Iron for sale. Two firms have announced that they are sold up for the remainder of the year. Regardless of the sold-up condition of the Basic and Bessemer producers, it is evident that a stable price policy has been adopted, and there is no disposition to advance the market. This policy is adopted alike by buyers and sellers. Basic is consequently strong at $17 and Bessemer at $17.25 to $17.50. The smaller consumers are having difficulty in getting Bessemer, most of which is going to the larger consumers. The Coke market is strong, with the best grades of 72-hr. Foundry selling at $2.85 to $3 at the oven, and the best grades of Furnace at $2.50 to $2.60 at the ovens.

Finished Iron and Steel.—The Bar Iron mills are mostly idle this week, all having shut down with July 1. One or two mills in this territory are beginning to resume activity after a fashion, but no mill has resumed completely. The majority are making repairs which will keep them out for the better part of the month. The agreed price of 1.50c. Pittsburgh for Bar Iron is still being quoted, although there is little for sale at that price. Most of the mills are filled up on higher-priced material sold some time ago. Steel Bars are still firm with good buying of both Bessemer and Open Hearth at 1.50c., Pittsburgh. This is taken to indicate that the buying during the recent period of lower prices was not as heavy as at first supposed. The sheet mills in the Valleys have been shut down for the past week, and some of them are beginning to resume. Some would have remained idle longer but the pressure of orders would not permit. The Sheet market is still strong, with a good demand. The business done out of stock here is on the following prices: No. 10 Blue Annealed, 2.15c.; No. 28 One Pass Cold Rolled, 2.85c.; No. 28 Galvanized, 3.80c. The demand for Galvanized sheets is especially strong. It was hoped that the shutdown of the Sheet mills would be of long enough duration to permit the mills to catch up with their orders on Billets and Sheet Bars. The contrary seems to be the case, and the resumption of activity by the Sheet mills only complicates

the Billet and Sheet Bar situation, bringing about a stronger market. Billets for forging are now quoted at $34 to $35, Cleveland, while Bessemer Billets sell at $29 to $30. The demand for Shapes and Plates is still strong, as it is understood there is a better demand for ships, with some new orders in prospect. In many instances smaller consumers are still relying upon the jobbers for a portion of their material. Deliveries from the Pittsburgh mills, however, are more prompt.

Old Material.—The market is quiet, due to the fact that many of the Bar mills are closed. The following are dealers' prices to the trade, in part nominal, for gross tons, f.o.b. Cleveland: Old Steel Rails, $14.50 to $15; Old Iron Rails, $21 to $22; Iron Car Axles (nominal), $18.50 to $19.50; Heavy Melting Steel, $14.50. Net tons: Cast Borings, $8.50 to $9; No. 1 Busheling, $12.50 to $13; No. 1 Railroad Wrought, $16; No. 1 Cast, $14 to $14.50; Iron and Steel Turnings and Drillings, $9.50 to $10.50.

New York.

NEW YORK, July 11, 1906.

Pig Iron.—There is a fair run of business, both in this section and in New England. A radiator manufacturer in the latter district has purchased 5000 tons out of a total of 8000 tons required, chiefly Tennessee and Buffalo Irons being taken. We quote: Northern Pig Iron No. 1, $18.50 to $19; No. 2 Foundry, $17.75 to $18.25, and No. 2 Plain, $17.25 to $17.50, tidewater. Southern Iron is quoted $18.25 to $18.50 for No. 1 Foundry, and $17.25 to $17.50 for No. 2, the freight from Birmingham being $4.

Steel Rails.—Some good inquiries, both for 1906 and 1907 delivery, have come to the Rail mills in the past week, but none of this larger business has been closed. It would seem that in a few instances December, 1906, deliveries are being sought by roads which will put the Rails in track in the spring of 1907. While some space is still left for 1906 rolling, there are mills which expect to carry over a part of their 1906 bookings. In the past week the Grand Trunk has bought 5300 tons and the St. Joseph & Grand Island 1570 tons for 1907 delivery, and the following orders have been booked for this year's delivery: Central of New Jersey, 2000 tons; the Wabash Railroad, 1000 tons additional; Lafayette & Logansport Traction Company, 4120 tons, with smaller sales aggregating 3000 tons.

Structural Material.—Including two or three important contracts which were virtually closed in June, but not finally entered until after July 1, the June bookings of the American Bridge Company amounted to 60,000 tons. The largest contract was for 25,000 tons for the new Open Hearth works at Gary, Ind. There is still to be awarded for the Rail mill at Gary 15,000 to 18,000 tons, which will be closed up this month. In the past week 3000 tons was booked for bridge work for the Illinois Central Railroad and several hundred tons for the new Fifth avenue building of Browning, King & Co. in New York. A large amount of bridge work is pending, including 6000 tons for the Western Pacific, the Gould extension from Salt Lake City to the coast; bids on this have recently gone in. Nothing new comes from San Francisco in the line of Steel erection, but the plans for the Humboldt Bank Building have been enlarged by five stories, so that more Steel will be required. This contract is being executed by Milliken Brothers. The New York, New Haven & Hartford Railroad is about to build two Scherzer drawbridges, which will require 1000 tons of Steel. The Big Four work has not yet been let. Moderate sized bridge contracts have been awarded by the Delaware & Hudson, the Boston & Maine and the New York Central. The McClintic-Marshall Construction Company, the Riter-Conley Mfg. Company and the Pennsylvania Steel Company have participated in these. There is no heavy buying of Structural Steel by jobbers or consumers, though the situation has improved in the past few weeks. The time has arrived in some cases where new contracts are to be made, and these will take the $2 a ton advance, which was made last year after the closing of contracts now expiring. There is some hesitancy about placing large contracts at a price higher than that at which the deliveries of the past year have been made, yet it is understood that all unspecified portions of contracts expiring on July 1 were canceled by the mills. We quote for tidewater deliveries on mill shipments as follows: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. On Beams 18 to 24 in. the extra is 0.10c., and on Angles over 6 in., 0.10c. Beams and Channels out of stock are sold at 2½c.

Bars.—As this is usually a period of slack demand for Bar Iron, the closing of a number of the Eastern mills by the strike has had little perceptible effect on the market. Inquiries are light. Consumers, however, are well employed, and are therefore steadily using up their stock. If the strike continues for any length of time prices will undoubtedly stiffen. Manufacturers quote 1.64½c., tidewater, for full specifications, but some are shading this rate on the limited range of sizes which they make. Steel Bars are held at 1.64½c., tidewater, with the current demand confined to small lots.

Plates.—The local demand is light. Contracts are running out, but consumers are not yet inclined to renew them, and will probably refrain from so doing until they can see some advantage to be gained. Prices are firm, quotations being as follows for tidewater delivery: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 2.14½c. to 2.24½c.; Fire Box Plates, 2.24½c. to 2.60c., according to specifications.

Cast Iron Pipe.—The pressure from buyers continues, and numerous orders for small lots are being placed for future delivery, even though shipments cannot be promised for four or five months. Bids are to be opened in this city to-day for about 3000 tons for municipal use, and announcement is made that Philadelphia will call for new bids on the 40,000 tons of Pipe and special castings needed by its water department. Carload lots of 6-in. Pipe are nominally quoted at $31 to $32, with none to be had for quick delivery.

Old Material.—Cast Scrap is in continued strong demand. The available stock is small and prices are therefore decidedly firm. Steel Scrap is being more freely shipped to Steel works, now that the embargo has been removed, but the shipments made are on contracts placed some time ago, no recent sales being reported. The few Eastern rolling mills in operation are buying moderately, but generally speaking the demand for rolling mill stock is quiet, although some inquiry is reported for deliveries beginning in September. Quotations for New York and vicinity are about as follows:

Old Iron Rails	$19.50 to $20.50
Relaying Rails	25.50 to 26.00
Old Steel Rails, rerolling lengths	16.00 to 16.50
Old Steel Rails, short pieces	14.00 to 14.50
Heavy Melting Steel Scrap	14.00 to 14.50
Standard Hammered Iron Car Axles	23.50 to 24.00
Old Steel Car Axles	18.50 to 19.50
No. 1 Railroad Wrought	17.00 to 17.50
Iron Track Scrap	15.50 to 16.50
No. 1 Yard Wrought, long	16.00 to 16.50
No. 1 Yard Wrought, short	14.00 to 15.00
Wrought Pipe	12.00 to 12.50
Light Iron	9.00 to 10.00
Cast Borings	8.00 to 8.25
Wrought Turnings	11.00 to 11.50
Old Car Wheels	16.00 to 17.00
No. 1 Machinery Cast	15.00 to 16.00
Stove Plate	10.00 to 11.00
Grate Bars	9.00 to 9.50
Malleable Cast	15.00 to 15.50

Metal Market.

NEW YORK, July 11, 1906.

Pig Tin.—The market has gradually declined, the week's loss being over 3 cents. Last Thursday the metal was sold at 38.60c. and on Friday at 37.70c. Monday the London market sold off sharply, which was followed by a drop in New York prices to 37.25c. Tuesday the London market was slightly higher in the morning, but in the afternoon all the gain and more was lost. Quotations in New York continued downward and Tin was sold in small lots at 37.20c. The London market to-day shows a loss of £5 since yesterday, closing at £165 for spot and £163 5s. for futures. New York prices are correspondingly lower, at 36c. A sale of 10 tons of July Tin was made at 36 cents. This sharp drop has been augmented by the selling of two prominent London houses who have, in the recent past, been among the leading operators for higher prices. The semi-panicky condition is largely responsible for a marked curtailment in the volume of business. There are consumers who are seriously asking why Tin should be from 5 to 8 cents per pound higher than a year ago, considering that the visible supply of the world on the 30th of June was slightly above that for the corresponding date last year. The arrivals so far this month aggregate 1358 tons and there are afloat for American ports 2222 tons.

Copper.—The London market is practically unchanged from last week, spot being quoted at £80 10s., and futures at £79 15s., while Best Select is held at £86. There is a fair demand from European melters, but business appears to be of a hand to mouth character. Reports from continental Europe are to the effect that consumers of copper have orders on their books that will tax their capacity for several months to come, still the profits are small and melters are buying only from hand to mouth, expecting lower quotations.. In this country sales of some small lots have been made at lower figures, but no large producers have made any notable concessions. The week's business was transacted within the following range of prices: Lake, 18.50c. to 18.75c.; Electrolytic, 18.25c. to 18.50c.; Casting Grades, 18c. to 18.25c. We learn of small sales of Electrolytic at 18.37½c. The larger producers of high conductivity Lake are still quoting 18.75c. A leading producer of Electrolytic states that it has no large quantity of metal to dispose of before October delivery.

There is little inquiry for future deliveries, but plans are under way which, if they materialize, will call for a considerable tonnage.

Pig Lead.—The market is easier, spot metal being quoted at 5.80c., New York delivery, forward deliveries of foreign Lead being obtainable at 5.75c. In St. Louis prices are also lower, at 5.70c. to 5.72½c. The American Smelting & Refining Company continues to quote shipment Lead in 50-ton lots at 5.75c. This price only governs existing contracts, new business being taken at the price current on date of shipment. In London the market is easier, at £16 6s. 3d.

Spelter.—The market is very dull and easy, spot being quoted in New York at 5.92½c. to 5.97½c. In St. Louis the market is slightly easier at 5.85c. to 5.90c. The quotation in London is lower at £26 17s. 6d.

Antimony.—There is no change in prices, Cookson's and Hallett's being quoted at 23c. to 24c., other brands at 22c. to 23c. As has been the case for some time there is considerable Antimony in this market which shows a good profit, and some holders are willing to dispose of it at slight concessions from the above quotations. It is noticeable, however, that London prices are above American parity.

Aluminum.—The principal producer of the metal is said to be making some headway as far as cleaning up old contracts is concerned, but is still in no position to ship metal promptly. Quotations continue nominally unchanged at 35c. for No. 1 Ingots and 33c. for No. 2.

Nickel.—Prices are unchanged, at 45c. to 50c. for large lots; 50c. to 65c. for smaller quantities.

Tin Plates.—The settlement of the wage scale, as far as the independent producers are concerned, clears up the situation somewhat, although not all of the mills affected have started operations as yet. Prices continue unchanged at $3.94, f.o.b. New York, and $3.75, f.o.b. Pittsburgh, subject to the usual trade discounts. In Swansea price is unchanged at 12s. 9d.

Old Metals.—There has been a slight easing in quotations of Copper and Lead, but these metals are still in excellent demand. Dealers' buying quotations are revised as follows:

	Cents.
Copper, Heavy Cut and Crucible	17.75 to 18.00
Copper, Heavy and Wire	17.50 to 17.75
Copper, Light and Bottoms	16.00 to 16.25
Brass, Heavy	12.00 to 12.25
Brass, Light	9.75 to 10.00
Heavy Machinery Composition	16.00 to 16.25
Clean Brass Turnings	11.00 to 11.25
Composition Turnings	13.50 to 13.75
Aluminum Scrap	26.00 to 28.00
Lead, Heavy	5.35 to 5.50
Tea Lead	5.20 to 5.30
Zinc Scrap	4.75 to 4.90

Iron and Industrial Stocks.

NEW YORK, July 11, 1906.

Although transactions in stocks have not been heavy during the week ending to-day, prices have ruled somewhat higher than in the preceding week. Holders were not pressing sales and the covering of shorts advanced prices. Brokers report an absence of investment demand, notwithstanding an unusually heavy midyear disbursement of interest and dividends, to say nothing of the excellent crop prospects, ordinarily to be relied upon to stimulate stock values. The total sales of stocks on the New York Exchange on Tuesday were only 337,000 shares, against a daily average of over 1,000,000 for a long time in the recent past. The range of prices on active industrials from Thursday to Tuesday was as follows: Car & Foundry common 35½ to 37, Locomotive common 65⅞ to 68¼, Steel Foundries preferred 41 to 43¼, Colorado Fuel 45 to 50⅝, Pressed Steel common 44 to 47, Railway Spring common 47½ to 50, Republic common 25¾ to 27, preferred 94 to 96¼; Sloss-Sheffield common 70 to 72½, Tennessee Coal 140¼ to 146, Pipe common 45¾ to 48¼, Steel common 33½ to 35⅞, preferred 99¾ to 102⅜. Last transactions to 1.30 p.m. to-day were made at the following prices: Can common 6½, preferred 53¾; Car & Foundry common 35½, preferred 99¾; Locomotive common 66⅝, preferred 116; Steel Foundries common 10½, preferred 42; Colorado Fuel 47⅛; Pressed Steel common 45⅞, preferred 96; Railway Spring common 50; Republic common 26, preferred 95; Sloss-Sheffield common 71; Tennessee Coal 142; Pipe common 46⅜; Steel common 34¼, preferred 101¼.

At a meeting of the Passaic Steel Company at Paterson, N. J., July 10, a plan was adopted that is expected to relieve the company from its financial embarrassment. At present the company, while it is said to be perfectly solvent, is unable to obtain loans because of $2,500,000 of first mortgage bonds. It is proposed to recall the bonds and pay the bondholders with preferred stock. The plan is to become effective when the committee appointed for the purpose has in its possession 60 per cent. of the bonds, 70 per cent. of the present issue of preferred stock and 66 2-3 per cent. of the common stock.

The earnings of the Crucible Steel Company of America, Pittsburgh, for the second quarter of this year, are given as $750,000, showing a very large increase over the same period last year.

Papers were filed in Uniontown, Pa., last week by the Pittsburgh Coal Company, whereby the Union Trust Company, Pittsburgh, is made trustee for all the properties acquired during the past two years. This includes a vast coal acreage in Allegheny, Fayette, Westmoreland and Washington counties. The action was taken at the instance of the Union Trust Company to secure further the issue of $25,000,000 first mortgage 50-year 5 per cent. sinking fund gold bonds.

Dividends.—The Harbison-Walker Refractories Company, Pittsburgh, has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable July 20.

The United States Cast Iron Pipe & Foundry Company has declared the regular quarterly dividends of 1¾ per cent. on its preferred stock and 1 per cent. on its common stock, both payable September 1. Hitherto the dividend on the common stock has been declared quarterly at the rate of 4 per cent., but this is the first time the payment has been specified as being a regular quarterly one.

The Foundry Labor Situation.

Several strikes have been added recently to the long list the Iron Molders' Union has on its hands. About 125 men employed in three piano plate foundries at Springfield, Ohio, went out on July 6 on account of a dispute over a piece work adjustment. At Columbus, Ohio, 288 men from nine shops struck on July 5 for a horizontal increase of 25 cents a day and a signed agreement with the union. At Port Chester, N. Y., on June 21, 120 stove plate molders struck at the plant of Abendroth Bros., owing to a dispute over recognition of the Shop Committee, the delivery of sand to the molders and the relining of ladles. Plainfield, N. J., reports that the local foundries, with one exception, granted an advance from $2.75 to $3 for the nine-hour day, already in effect, the advance dating from July 1. No agreement was signed. At one shop the molders struck on June 25 because of the employment of an independent worker on molding machines. The firm posted an open shop notice and refuses to take back its former employees except as individuals.

At a number of points the molders are still at work, after having made demands which the foundrymen refused. Pittsburgh is conspicuous in this list, which includes also Springfield, Mass., Dayton, Ohio, and Montreal, Quebec. A demand has been made at Akron, Ohio, for a reduction in hours from 10 to 9 and a minimum wage of $2.75, but foundrymen have taken no action.

Sixty-six men went out at the foundry of the Deane Steam Pump Company, Holyoke, Mass., on June 25 and remained out three days. They asked a minimum of $3 for molders and $2.75 for coremakers, with a reduction from 10 to 9 hours, these being the demands for all foundries in that city. The Deane Company granted the nine-hour day without any other concessions, and no signed agreement was made.

A partial settlement was made at Grand Rapids, Mich., where the strike started on May 7. In seven foundries 112 men struck. The offer of the Iron Molders' Union's national officers to have the men return under old conditions was refused. Three foundries secured additional concessions and 32 men returned to work. Four foundries employing 80 men announce that they will run as open shops.

The week has brought no definite development in the Amalgamated Association strike at Eastern rolling mills. No disposition has been shown on the part of the men to modify their original demand, which was for an advance of 12½ per cent. in all departments, and there has been no response by union men so far as reported to the notices posted notifying the employees to apply for positions at the old rates. So many Eastern mills are already operated nonunion that the success of the strike seems doubtful. In addition to the mills mentioned last week as closed by the strike are those of the Penn Iron Company, Limited, Lancaster, Pa.

The Machinery Trade.

NEW YORK, July 11, 1906.

There was a slight lull in the demand for machine tools the past week, but as conditions seem to be as promising as they have been it is generally thought that the trade will soon be as active as at any time since the beginning of summer. No new propositions of magnitude were brought to the front, though the trade received the large list of machine tools promulgated by the Baltimore & Ohio Railroad, and which was printed in these columns a couple of weeks ago. This list is an extensive one, covering many large tools. In the West specifications for a few tools were sent out by the St. Louis & San Francisco and Denver & Rio Grande railroads. One of the automobile companies placed a fair-sized order a few days ago. We have often referred to the large demand for steel cars and the possibilities of the car companies coming into the market for tools. It is understood that the management of the Union Pacific Railroad has, after extended experiments, adopted the steel car for both passenger and freight. This would mean an increase in steel car capacity.

The fact that manufacturers of castings who do a general line of work have been able of late to turn out orders with more facility than they have within the past four or five months, has eased up on manufacturers of the smaller classes of machinery who depend on them for their deliveries, and accordingly those who make inquiries along the line of smaller machines are given better delivery.

New Association in the Machinery Trade.

Associations have proved to be so advantageous to the branches of business with which they are allied that they have materially increased in number and have become very prominent within the past few years. Particularly has this been the case in the machinery trade where there are several associations, each of which plays an important part in its respective field. Their meetings are followed with a keen interest throughout the country, especially those of the National Association. Knowing the benefits derived from these associations the machinery and supply dealers of New York, many of whom are members of other associations, have formed the M. & S. Credit Association, whose object is to promote sociability among the members, and acquaint them with the standing of prospective customers. While the association was only organized July 6 at the Astor House, most of the prominent machinery and supply houses have already identified themselves with it. It is the intention to meet from time to time to discuss business, but as yet no special dates have been set for the meetings. At the meeting last week the following officers were elected: President, C. A. Moore, Jr., secretary of Manning, Maxwell & Moore; first vice-president, Henry Prentiss, of the Prentiss Tool & Supply Company; second vice-president, A. E. Brion, of Peter Frasse & Co.; secretary and treasurer, J. R. Vandyck, of the Vandyck-Churchill Company. Mr. Prentiss has been chosen chairman of the Machinery Committee, and George Maclagan, of the Garvin Machine Company, is chairman of the Membership Committee.

Machinery Requirements.

Since the list of tools and machinery, known as the regular tool and machinery programme, has been issued by the purchasing department of the Pennsylvania Railroad Company, a short time ago, the demands of the company upon the tool trade for bids have been of comparatively little importance in point of quantity. The quotations have been coming in rapidly upon the annual programme and a number of purchases have already been made, and the indications are that little time will be lost in closing up the business after the bids have been received and the propositions have been considered. Blue prints have been sent to the structural steel manufacturers showing a proposed boiler shop and inviting bids. In general design, quality of workmanship, material, factor of safety, painting, &c., the building is to be in accordance with Pennsylvania Railroad Company specifications, with which bidders of this class of work for this company are familiar. The invitation to bid requires that bids are to be made in a lump sum basis and the approximate weight to be given; bids are to be supplemented with cost per additional bay, provided it is decided to extend the 90 or 70 ft. spans one or more bays in length. Blue prints have also been sent out showing a proposed coaling station, which is to have a capacity of 400 tons and is to be capable of handling from 75 to 100 tons per hour. Three different types are specified, and the inquiry recites in detail the particular points of the three different schemes. The remaining barges for coal, covered by the 1906 floating equipment programme, are now authorized for construction and the purchasing agent is requesting bids. The barges are of 800, 900 and 1000 tons capacity, and four of each capacity are wanted. The following list includes the remaining inquiries made by the purchasing agent: One 8-hp. combined engine and pump, price to include a gasoline storage tank of 120 gal. capacity; one 5-hp. boiler, to be complete with all appurtenances and to be built in accordance with Pennsylvania Railroad specifications, which require that test pieces of material are to be forwarded to test department; one centering machine to center stock from ½ to 5 in.; one centering machine to center stock from 5 to 10 in.; one three-motor electric traveling crane, capacity 10½ tons; one three-motor electric traveling crane, capacity 12½ tons.

The boiler shop equipment for the new Readville shops of the New York, New Haven & Hartford Railroad, New Haven, Conn., on which many manufacturers in this section are submitting bids, comprises a list of 14 motor-driven tools, as follows: One portable pneumatic staybolt nipper with sufficient strength to nip off 1¼-in. stay bolts close to the sheet; one portable pneumatic mud ring riveter, 8-in. throat, with a distance between the center of the die and frame of 6 in., and to drive steel rivets up to 1¼ in. in diameter, to be furnished complete with dies, &c.; one portable pneumatic tank riveter with a 72-in. throat to drive ⅝-in. steel rivets, to be furnished with dies, &c.; one Ryerson flue cleaner, complete with six flue cars or buggies, motor and electrical apparatus to be furnished; one horizontal flange punch with a capacity of 1½-in. hole in 1⅛-in. plate, depth of throat 12 in., adjustable automatic stops and to be provided with a set of punches and dies; one portable solid frame punch with a capacity of 1¼-in. holes in 1-in. plates and a throat depth of 54 in.; one set of plate straightening rolls for ¾-in. x 6-ft. plates of the 8-roll type, pinch rolls to have a hand adjustment and a hight index; one rail sawing machine for 100-lb. section steel rails, to be arbor driven and arranged to cut between 135 and 145 degrees to the axis of the rail, to be provided with a variable automatic friction feed and the carriage to be operated by feed screw; one cold cutting off saw, with a capacity of cutting bars 4 in. square, arbor driven, to be furnished complete with one saw and saw sharpener, the carriage to be operated by feed screw; two bar iron shears to cut rounds up to 2½ in. in diameter and flat bars 6 x 1½ in., guillotine type preferred; one rotary splitting shear for ¾-in. shear; one rotary bevel shear for ¾-in. plates; one plate shear for 1-in. steel plates, with 54-in. throat and adjustable automatic stops.

A large plot of land in and near the city of Macon, Ga., has been purchased by the Central of Georgia Railway Company with the intention of erecting new shops on the site. No definite plans for the machine and car shops have as yet been prepared, but it is probable that they will be taken up shortly.

About $60,000 is to be expended by the Fuller Combing Gin Company, Charlotte, N. C., in the erection and equipment of a thoroughly up-to-date plant for the manufacture of the Fuller combing gin. The company informs us that it will be in the market during September and October for foundry equipment, air compressors, freight elevators, steel or concrete chimney and various tools and materials. We understand that the company is now in correspondence with machinery houses getting prices on some of the machines which it intends to buy.

Quite an amount of new machinery will soon be required by the Brosius-Montz Mfg. Company, New Orleans, La., which was recently incorporated with a capital stock of $500,000 to manufacture the Brosius no-treadle sewing machine and spring motor, two devices which are to be worked in conjunction. The company is now considering sites for the erection of its proposed plant, plans for which have not yet been completed. The establishment of the plant will involve the expenditure of considerable money, a good part of which will be needed for the machinery department. Charles S. Montz, president and general manager, who is located at 336 Baronne street, informs us that the company will soon be in the market for drill presses, lathes, cupolas and other foundry equipment, power plant equipment, tools and iron and steel.

The directors of the Matheson Motor Car Company, Wilkesbarre, Pa., have authorized the purchase of $25,000 worth of additional machinery for its plant. The company has placed orders during the past week for considerable of this equipment, but we understand that there are some tools yet to be bought. The matter of increasing the size of the plant by the erection of additional buildings was brought up at the meeting, but it was laid over until the next meeting of the directors. The company is doing such a large business that there is very little doubt but the plant will be materially increased very shortly.

The American Smelting & Refining Company is still buying machinery for its new smelting plant in San Francisco, and is also buying for some of its other Western plants. The company has a number of inquiries out for heavy cranes, and has also been asking about some heavy power equipment. It is understood that all of the San Francisco requirements will be settled upon within the month.

T. Schriver & Co., 333 East Fifty-sixth street, New York, are erecting at Harrison, N. J., a new building 200 x 500 ft. for the manufacture of castings. The building operations are in charge of the firm, and all of the machinery

equipment will be purchased from its New York office. The amount of horsepower to be used has not been decided upon as yet, but within a very short time the power equipment will be purchased.

There are some inquiries in the market for minor equipment for the new power house of the Norfolk & Portsmouth Traction Company, to be built at Norfolk, Va., at a cost of $190,000. The company has secured a permit from the Building Department to erect a building 157 x 168 ft., and the Scofield Construction Company, Philadelphia, has the general contract. The matter of power equipment has not yet been decided, and the inquiries now in the market relate only to the cranes and other minor equipment.

A new drop forging plant is being built at Massapequa, L. I., by the Merrill Drop Hammer Company, and E. W. Merrill, Jr., of Merrill Bros., Kent avenue, Brooklyn, who make drop forgings, is in charge of the general details regarding the construction of the plant. The company is now arranging for the construction of a building 50 x 150 ft., and it is understood that one of the buildings connected with the plant is already up. The plant will be devoted to the manufacture of general forgings, and the details regarding the amount of horsepower and the general equipment has not been worked out as yet, but it is expected that they will be gone into within a few weeks. None of the equipment has been purchased.

The American Can Company, Fourteenth street and Tenth avenue, New York, is inspecting several building sites in the South with a view to buying property for the construction of a new plant. The company has all preliminary plans completed for the proposed plant, which will be a large one. Within the next week or two the company will decide on a location for the proposed plant, and directly afterward arrangements will be begun toward purchasing the machinery equipment.

The United States Printing Company has not settled as yet upon its motor equipment for the new addition to its New York plant. The company has its enlargements well under way, but there is still considerable to be bought in the way of machinery equipment. It is said in the market that all of the requirements will be closed out within a short time.

Business Changes.

The Goulds Mfg. Company, Seneca Falls, N. Y., has opened a branch office in the Chemical Building, St. Louis, Mo., which is under the management of H. C. Dudley. The opening of this branch will enable prospective customers to secure promptly full information pertaining to the Goulds complete line of efficient triplex, rotary, centrifugal and electric pumps, deep well working heads, &c.

The Sprague Electric Company announces that it has reopened its office in San Francisco. The former office was destroyed by the earthquake, after which temporary quarters were opened in Oakland. The company is now permanently located in the Atlas Building on Mission street, San Francisco, Cal., where all orders from that territory will receive prompt attention.

Catalogues Wanted.—Washburn & Granger, 120 Liberty street, New York, desire catalogues and information on soap wrapping machinery for export trade.

Chicago Machinery Market.

CHICAGO, ILL., July 10, 1906.

Several railroad lists were received by machinery dealers this week, including equipment requirements of the St. Louis & San Francisco and the Denver & Rio Grande railroads. Tools for the boiler shop equipment of the New York, New Haven & Hartford Railroad are also being figured on by Western dealers and manufacturers, and it is probable that a portion of this equipment will be placed in this section. Deliveries of punches, shears and other blacksmiths' requirements can be made in less time at present than required for other iron and steel working tools, but the purchases of structural works of late have been heavy and builders are not suffering from a dearth of orders. It is reported on reliable authority that a new company is being organized in this city for the manufacture of steam and gas engines and electrical equipment, and that many of the former officers of the Allis-Chalmers Company will be prominene in the management of affairs. No confirmation has yet been secured, although it is probable that the plans of the new company will be shortly available.

Two Railroad Lists.

The Denver & Rio Grande Railroad Company is in the market for a number of tools to be distributed among its various shops and the list, which has just been issued by Thomas Tipton, purchasing agent, includes the following equipment: One No. 3 combined punch and shear, with 30-in. throat, capable of punching 1-in. hole in 1-in. plate and shearing 1-in. plates; one spur gear hoist, 8000 pounds capacity, with a lift of 10 ft.; one 2500-pound single upright 30-in. stroke steam hammer; one portable cylinder boring bar. 4½ in. in diameter and 9 ft. long, provided with cutter heads for boring cylinders ranging from 17 to 36 in. in diameter; one No. 2 valve facing machine, capacity up to 48 in.

The St. Louis & San Francisco Railroad Company, of which F. P. Jeffries is purchasing agent, with headquarters at St. Louis, has just promulgated a list comprising 11 tools for installation in its boiler and blacksmith shops, and includes the following: One Newton No. 3 combination cold saw for rail and frog work, chain drive, to be electrically operated and to be equipped with a clamping apparatus; also a saw sharpening machine, one Kanada mechanical blacksmith, two duplex 350-ft. air compressors, one 800-ft. duplex air compressor, one Hertz flue welder, one 250-pound Niles-Bement-Pond steam hammer, to be operated with treadle; one 550-ft. duplex air compressor, Imperial type; one duplex 350-ft. air compressor; one Hilles & Jones No. 1 double punch and shear, with a 20-in. throat; one 18-in. engine lathe.

The Whiting Motor Car Company, Jackson, Mich., has been incorporated with a capital stock of $500,000, fully paid in. The company will be a branch of the Buick Motor Company and will build the Buick cars. The old factory of the Buick Company will be occupied by the new concern, the former having concentrated its manufacturing facilities at Flint, Mich. Additional machinery will be installed to supplement the present equipment of the factory and an addition to the buildings will be made, giving ample room for the building of 1000 cars of the four-cylinder type. This number will make the total output of the Buick Company 4000 cars. The officers elected for the Whiting Motor Car Company are: J. H. Whiting of Flint, president; C. M. Bigol, vice-president, and W. C. Durant, secretary and treasurer.

The Iowa Hard Plaster Company, Fort Dodge, Iowa, recently incorporated, will build and equip a mill for the purpose of manufacturing plaster and other gypsum products. The mill will be located about 3 miles from Fort Dodge, on land owned by the company and located on the Illinois Central and Chicago Great Western railroads. The company is in the market for engines, crushers, grinders, kettles for calcining, conveyors, &c., and expects to have a thoroughly modern mill ready for operation by January 1, 1907. Officers are J. B. Butler, president; J. J. Ryan, vice-president; Daniel Rhodes, treasurer, and R. W. Merrill, secretary and general manager.

The Somerville Development & Improvement Company, Somerville, Texas, is preparing to erect a 50-ton plant for the milling and preparation of Fuller's earth. Plans have not yet been drawn, but the company expects to be ready to let contracts in about six weeks. The machinery needed will consist of engines, boilers, dryers, fans, crushers, pulverizing machines and some tram railway equipment. N. W. Dunham is president and J. A. Jones secretary-treasurer.

The city of Paw Paw, Mich., has decided to erect a water works plant to cost $500,000. Equipment will shortly be advertised for.

The Board of Public Works of Milwaukee, Wis., has advertised for bids, to be opened August 1, for the North Point pumping station, for one 20,000,000-gal. pumping engine, which will be a part of the water works system of the city. At the present time there is being placed in position a pump of the same capacity, which was ordered last year from the Brown-Corliss Company. It will be ready for service by the first of August.

Philadelphia Machinery Market.

PHILADELPHIA, PA., July 10, 1906.

Notwithstanding the fact that the past week has been materially broken up by the national holiday, the aggregate volume of business transacted in the local market was particularly good. Usually but little business is expected the first week in July, many plants closing for semiannual stock taking and for repairs of various kinds. The past week, however, has been the exception to the general rule and considerable business on account of the larger specifications which have recently been before the trade was placed. The Baldwin Locomotive Works has about cleaned up the unplaced balance of the requirements for its local plant, the orders being mostly taken by local concerns. Several very nice orders on the recent specifications of the Pennsylvania Railroad Company were also received by local manufacturers and dealers, and these, together with a fair amount of sales of individual tools, brought the total week's business up to a most satisfactory aggregate.

Conditions for a good run of business during the summer months are considered very favorable. The placing of orders against the larger propositions already before the trade is expected to continue, and there is a good demand for tools for replacement and for minor extensions. In the latter class the tendency of late has been largely toward the medium sizes of tools, in some cases it being particularly noticeable that a number of tools of the larger sizes still remain on dealers' floors, on which immediate delivery could be had should buyers be in the market for those sizes.

There has been no change in the general activity of manufacturers of machine tools in this territory. The volume of business taken during the first six months of the year was very satisfactory, and makers' plants continue without exception in full operation at their maximum capacity. In a few instances there have been slight improvements in deliveries, but in the majority of cases the incoming business has been large enough to preclude the possibility of any improvement in delivery dates, and in others they have been considerably extended.

The average volume of foreign business done during the first six months of the year was not very large. The attention of builders of the standard types of machine tools has been fully taken with the domestic trade, and little or no effort has been made to enter the foreign market. Manufacturers of certain types of special tools, however, have had a fairly good run of business from abroad, while makers of power transmission and machinery specialties and some lines of supplies, and particularly those who have an established trade abroad, note about the average demand for their products.

The demand for boilers and engines, more particularly for those of the higher and medium capacities, continues good, and some nice sales have recently been made. Business in the smaller horsepowers, however, continues weak. Gas, gasoline and oil engines have been well sold and have made some inroads in the sales of the smaller, and in some cases even the medium and larger, sizes of steam engines and boilers.

Second-hand machine tools have been well sold up, and desirable sizes of some classes of tools are rather scarce. Dealers, however, are adding to their stock, and in most cases tools wanted to supply temporary needs of purchasers can be had with little delay.

The demand for castings, both gray iron and steel, continues active. The large amount of new business taken by machinery manufacturers has added to the already extensive demand for castings, and it is hard to obtain good deliveries, particularly in the case of steel castings. Most plants are occupied at their fullest capacities, and with the decreased production usual during the midsummer months find it hard to satisfy their customers' wants as promptly as desired.

The Bureau of Filtration, Department of Public Works, city of Philadelphia, is asking for proposals to make a general overhauling and repairs to the D'Auria pumping engine, surface condenser, &c., located at the Wentz Farm Reservoir, specifications for which may be obtained from the office of the bureau, 710 City Hall, bids on which will be received until July 18.

The Heany Fire Proof Wire Company, York, Pa., has recently acquired by purchase the patents, machinery and wire business formerly in possession of the Teter-Heany Developing Company. The company was formed for the purpose of manufacturing the Heany fireproof insulated magnet wire, for all kinds of heavy electric service. The special property of this wire is its indestructible insulation, which enables it to withstand any degree of heat up to the melting point of copper. The new company has purchased the plant of the Norway Iron & Steel Company in the above city, and while its needs regarding the general equipment of the plant have not yet been fully determined upon, it is having a large number of special machines built which will be installed as rapidly as possible, so as to meet the demand for the product. T. A. W. Shock is general manager and Wm. H. Easton sales manager.

The Baldwin Locomotive Works has awarded the contract for the erection of a five-story addition to its office at Broad and Spring Garden streets, previously noted in these columns, to Roydhouse, Arey & Co.; an additional story will also be placed on the present office. Every modern convenience will be provided in the new building, the cost of which is estimated at $100,000.

W. E. Shipley, machinery merchant, has sold to a local concern six Reeves variable speed countershafts of the larger size. He also reports a good demand for the various lines of machine tools, and has recently booked orders for a number of tools for the Baldwin Locomotive Works and for the Pennsylvania Railroad Company. Sales of individual tools, particularly of the medium size tools, have also been made to various local and nearby customers.

H. B. Underwood & Co. note an increased demand for portable railroad shop repair tools from foreign sources and a number of orders have been booked for export, including one for two portable boring bars and two portable rotary valve seat planing machines, of which shipment will be made during the present week. A number of special portable tools for railroad and general machine shops, including boring bars, crank pin turning machines, valve seat rotary planing machanes and other tools, have also been furnished railroads and individual concerns in both the Southern and Middle Western States.

Wickes Brothers, through their local branch, report a good demand for boilers, engines, air compressors and general equipment, and a number of orders have been taken. Increased sales of engines of the medium powers are particularly noticeable, and several have been furnished various customers. A 10 x 10 straight line air compressor has been furnished the W. J. Oliver Mfg. Company, Knoxville, Tenn.

The Philadelphia Roll & Machine Company is very busy, more orders for charcoal iron castings being on its books than at any previous time in the history of the company. Inquiries for rolls have been exceptionally good, and orders for sand rolls weighing from 8 to 10 tons each, and for chilled rolls ranging from 6 to 10 tons each, have been numerous. A good quantity of machinery castings, engine beds, flywheels and other castings, all of charcoal iron, is also being made for various customers. In addition to numerous deliveries of both sand and chilled rolls recently made to many of the large steel and iron mills, shipments of rolls for copper, brass and rubber rolling are also to be noted.

The Energy Elevator Company reports an increased demand, both from the local and out of the city trade, for its different classes of elevators. Carriage elevators have been furnished parties in Darlington, S. C.; Clarion, Pa., and Grandby, Mo., as well as to several local concerns. A hand power freight elevator is being installed in the quartermaster's department, United States Army, San Antonio, Texas, while the warehouse of the James Spear Stove & Heating Company of this city is being equipped with a large electric freight elevator. A number of hand power freight elevators have also been installed for various local parties, and others have been shipped to purchasers in various sections of the United States.

Cincinnati Machinery Market.

CINCINNATI, OHIO, July 10, 1906.

The week just closed has been similar to its predecessor, in that much new business has been booked. This is usually the time of the year when industries generally suffer a decline and trade marks its low ebb, with here and there a spasmodic interval of activity. This year, however, is proving to be an exception to the general rule, and instead of ocasional spurts of trade there has been a tremendous volume rushing forward at high tide that makes no distinction between July and December. Foreign demand has apparently lost none of its activity, and had expectations been fully realized and Japan come forward for her full quota of machine tools at the close of the war, as conjectured, it is a difficult matter to say what conditions might have been. The proposition, however, is self-evident that instead of deliveries being as at present, two to three months behind, in many instances they would have been six months and even more. Manufacturers are somewhat hampered in carrying out plans of expansion by the great difficulty experienced in securing a sufficient number of men to equip the added facilities, and were it not for this fact more new buildings would be erected and shops made larger and output greatly increased. There has been no friction, however, between manufacturers and men and all is quiet.

The new steel foundry plant is running two melts per day and has more orders than it can fill for early delivery. It is very probable that it will be necessary to further extend this plant in the near future, as almost unlimited ground space is at its command and facilities for shipping are excellent.

Some months since mention was made in these columns that a large tract of land had been purchased by the Licking Rolling Mill Company and that a large steel plant would be erected at an early date. Articles of incorporation were drawn up last week for the Andrews Steel Company, Newport, Ky., with a capital stock of $500,000. Joseph A. Andrews, A. L. Andrews, Joseph B. Andrews, Albert K. Andrews, W. N. Andrews and Joseph G. Andrews are the incorporators. The objects of the incorporation as set forth are to engage in the manufacture, buying and selling of steel and iron. The site consists of 17 acres along the bank of the Licking River, north of the Queen City race track. It is understood that work of constructing the buildings will be commenced immediately and hurried forward to completion.

The Globe-Wernicke Company has increased its stock from $2,500,000 to $3,500,000. This company has an immense plant at Norwood, covering several acres. Large numbers of machine tools form part of the equipment, both for iron and steel, as well as woodworking. Owing to the large increase in business it has been decided to greatly enlarge the present plant by the addition of about 70,000 sq. ft. This addition will be utilized for the manufacture of sectional filing cabinets from steel. It is certain, therefore, that considerable equipment will be added to take care of the extra floor space. The plant when completed will represent about 700,000 ft. of floor space.

The Weber Foundry Company, at Sherman and McLean avenues, this city, is erecting a building 46 x 65 ft. wide in connection with its present plant. This will be equipped with a traveling hand crane, while the foundry proper will have a new 10-ton traveling electric crane. The machinery is all to be motor driven, with compressed air for hammers, &c. This addition was made imperative by a demand for more molding space, and when complete will add about 10

per cent. to the output of the plant. Two Tabor molding machines are ready for installation, as are also several other tools. An industrial railroad is being laid through the center of the main building, with switches to cupolas for conveying iron. As will be remembered, the company recently moved to this city from Newport on account of labor troubles, having bought the plant formerly occupied by Wessling Brothers Foundry Company. A specialty is made of a general line of machine tool castings.

The Bickford Drill & Tool Company reports the largest business since the organization of the company. It has been found necessary to expand the plant, and a portion of the foundry building adjoining is now being utilized. Considerable money has been spent in the way of new equipment for temporary betterments until the Oakley proposition has fully matured, when a spacious building will be erected and equipped.

New England Machinery Market.

WORCESTER, MASS., July 10, 1906.

The influence of the warm weather and the vacation season is felt at last in the trade, most of the dealers reporting a noticeable let-up in the volume of their business. There are a few exceptions to those who are feeling the falling off of orders, however, an occasional dealer stating that little change is apparent in the totals of sales as indicated on his order book. Manufacturers of machine tools and kindred lines of equipment find a continuance of the rule which has prevailed of late months, for the total shipments for the month of June were exceeded by the total orders; and so far July has shown but slight change in these relative items. This means, of course, that deliveries are still drifting further away.

It seems pretty well assured that no hitch will come to prevent the auction sale of the machine tools, small tools and stock in the shops of the Shaw Machinery Company, Lowell, Mass. H. E. Warner, the receiver, has formally advertised the sale, which Judge Lowell of the United States Circuit Court ordered for Wednesday, July 25. J. E. Conant, Lowell, Mass., who will act as auctioneer, has prepared an elaborate catalogue of the machinery, tools, steel, tubing, &c., which will go under the hammer, and it will be ready for distribution in a few days. The machine tools alone are valued at approximately $125,000, and there are those who think this figure too low, considering the condition of the market and the fact that everything to be sold is practically new, some of it entirely so. It has been feared by machinery buyers, and hoped by the creditors, that interested parties would come forward with the money to pay all claims in full and thus stop the sale. Probably no one could buy up every claim with this end in view, but it would be entirely feasible to secure a sufficient amount of claims to give a proper status in court to a petition for a withdrawal of the order for the auction sale. If, however, steps have begun to secure such a settlement of the matter the fact is not known in the trade nor to most creditors. Consequently it is taken for granted that the large number of machine tools will become available for distribution in various lines of metal manufacturing.

Fred Perkins, Perkins Machine Company, manufacturer of presses, Warren, Mass., and A. P. Lee, one of the company's engineers, are to travel abroad this summer for the purpose of familiarizing themselves with European conditions as they affect the press business. They will visit Great Britain and Ireland, Switzerland, Germany, Italy, France, Holland and Belgium.

The American Woodworking Machinery Company proposes to abandon its plant at Norwich, Conn., which was operated by C. B. Rogers & Co., until the business went into the combination. The company has begun the erection of large works at Rochester, N. Y., and the understanding is that the business of the Norwich branch will be moved there as soon as the buildings are ready for occupancy, or perhaps not until next spring. About 90 men are employed at Norwich.

John F. Rogers, Belfast, Maine, is equipping a shop for the manufacture of several types of shoe machinery. He is in the market for a back geared drill press, a second-hand shaper, a japaning oven and a case hardening furnace.

The American Wringer Company, Woonsocket, R. I., is considering the erection of a large plant to be located near Milwaukee, Wis. A large addition to the Woonsocket factory is being built, but even with the greater manufacturing facilities which the new buildings will provide it seems desirable to establish even larger works. The matter is now under consideration by the Board of Directors, which means that no final decision has been reached.

F. P. Pfleghar & Son, New Haven, Conn., machinists and manufacturers of light hardware, who have just let the contract for a large shop building at New Haven, have purchased a portion of the new tools which will be required, but more equipment will be bought later, the list of which is not yet prepared.

The new buildings of the United Shoe Machinery Company, Beverly, Mass., will be larger than at first announced. Three extensions of existing manufacturing buildings will be each 60 x 300 ft. and four stories; a fourth building will be one and two stories and 60 x 300 ft., and a fifth will be one and a half stories, 60 x 150 ft.

It is understood that the Boston Heat, Light & Power Company, which owns a number of electric and gas plants in the towns of northern central Massachusetts, has acquired property at Still River, Mass., and plans to build a large electric power plant on the premises, to supply electricity to a number of towns, including the large towns of Clinton and Leominster, it is stated. No formal announcement of the plans of the company has been made.

W. H. Leland & Co., Worcester, Mass., manufacturers of machine tools and crank shafts, are to build a new shop at the corner of Southbridge street and Hope avenue. The building will be 82 x 104 ft. and one story. The site is on the line of the Norwich & Worcester division of the New York, New Haven & Hartford Railroad, which will permit of a spur track. Some new tools will be needed, in addition to several Brown & Sharpe universal grinders which were ordered a year ago. The list is not fully decided, but it will include several engine lathes, grinders and probably a planer and a 28-in. sliding head upright drill. The company proposes to build a new universal toolroom grinder for the market when the new shop is completed. The machine has been developed and tested out, and little remains to be done before beginning its manufacture, which has not been possible hitherto because of limited shop room.

The Johns-Pratt Company, Hartford, Conn., manufacturer of electrical specialties, has completed plans for extensive additions to its works, which have been alluded to in a general way in this column. A part of a building about 40 ft. square will be torn down and replaced by a four-story structure, 40 x 93 ft. The adjacent building will be increased in hight by two stories for a distance of 106 ft.; another building, 42 x 80 feet, will be raised two stories, and a building 45 x 75 feet will be raised one story. Still another building will be extended, the addition to be 27 x 32 feet, two stories and basement. Altogether 31,500 square feet of additional floor space will be obtained.

The Geometric Tool Company, New Haven, Conn., manufacturer of special machinery and tools, is to add still another story to the addition which was recently completed, giving a space 34 x 60 ft., which will be used for the assembling department.

The Bridgeport Malleable Iron Company, Bridgeport, Conn., manufacturer of malleable iron castings, has decided to build the addition recently alluded to in this column. The new building will be 71 x 313 feet and will be used for foundry purposes. No machinery will be required in connection with this building.

The Meriden Machine Tool Company, Meriden, Conn., manufacturer of machine tools, has made a change in management in connection with a reorganization which has not yet been completed. The company's works are running to their full capacity in supplying the trade with its machines. The officers are: President, H. Wales Lines; secretary, W. L. Cheney, and assistant secretary and manager, G. E. Bicknell.

The Osborne & Stevenson Mfg. Company, Plainville, Conn., manufacturer of hardware, is contemplating making some extension of its works, but no definite plans have been prepared, though such a report has been widely circulated.

The Union Hardware Company, Torrington, Conn., is to make extensive additions to its plant this season, by the building of an addition to its No. 1 manufacturing building, 100 x 100 ft. and two stories, and a storehouse and packing department, 56 x 300 ft., one story, with two ells, each 40 x 150 ft. and two stories. The cost of the additions will be $60,000.

The plans of the United States Flanged Forged Fittings Company, which was recently organized to take over the business of the United States Foundry & Sales Company, South Norwalk, Conn., have been upset by the action of the creditors of the latter corporation, who have held a meeting and appointed a committee to examine into the financial condition of the business. The United States Flanged Forged Fittings Company had stated to the trade that it would be in the market for a large amount of machine tools and other equipment.

The Meriden Fire Arms Company, Meriden, Conn., states that its building plans for this season will not be extended. The published report that a machine shop building 400 ft. long would be erected, in addition to the buildings now practically complete, is premature, the company states. Such a building may be erected next season, however.

The Machinery Exchange, 10 Oliver street, Boston, has been opened for business. It is patterned, on a small scale,

after the Philadelphia Bourse. Space is railed off for each tenant, some of whom have machinery in stock. Among the tenants are Frederick A. Cheney, agent for the Berlin Machine Works, Beloit, Wis., and the Advance Machinery Company, Alliance, Ohio; the Mathew Gravity Carriage Company; Blaisdell Machinery Company, Bradford, Pa.; Keystone Lubricating Company, Steam Specialty & Supply Company and Dey Time Register Company.

Thomas Crowther & Co., machinery dealers, Boston, are occupying their new quarters at 170 Oliver street.

Cleveland Machinery Market.

CLEVELAND, OHIO, July 10, 1906.

Machinery dealers are beginning to experience the annual let-up in business which usually accompanies the vacation season. However, this is somewhat later than it usually comes, the month of June being one of the best on record for the majority of concerns. There is an indication, too, that the inability of manufacturers to make any kind of prompt deliveries on the majority of standard tools is beginning to have the effect of causing many people to piece out with what they can get of second-hand or odd tools rather than place orders for machinery which cannot be delivered until the early part of 1907. Dealers report also that strikes and rumors of labor troubles are also having the effect of curtailing orders somewhat. It is getting to be an old story to say that the automobile interests of Cleveland and vicinity are furnishing the dealers with a large proportion of their business on certain classes of tools, but it is nevertheless a fact that there seems to be no limit to the machinery which these manufacturers are installing in preparation for a big season in 1907. The automobile makers are getting ready to commence active operations on new models, and they are buying many odd tools in addition to machines which were ordered months ago and are now being delivered.

The Corlett Engineering Company, Cuyahoga Building, Cleveland, Ohio, will place contracts this week for new buildings for a large plant to be erected at Canton, Ohio, for the Republic Stamping & Enameling Company. The latter company was formed some weeks ago with $400,000 capital stock, and is officered by J. Milligan, president, and C. H. Knight, secretary and treasurer, both prominent Canton men. It will manufacture granite and white ware, and will have an output of 30,000 pieces per day. The plant will comprise three buildings 300 x 400 ft., of brick and mill saw tooth construction. Contracts were placed last week with the Toledo Machine & Tool Company, Toledo, for punches, dies, draining presses, spinning lathes and power presses, aggregating about $40,000, and with the W. O. Huston Company, Bellaire, for furnaces and smelters. A small amount of machine shop equipment will be purchased later. There will be a power plant in which two 200-hp. gas engines, utilizing natural gas, will probably be installed, together with a 75-kw. generator, not yet purchased. The Corlett Engineering Company will install a waste heating outfit for heating the buildings, utilizing the heat from the smelters and furnaces.

The Bellevue Pipe & Foundry Company has been organized with $100,000 capital stock by H. C. Stahl and others of Bellevue, and H. D. Keller and Thomas E. Robinson of Detroit, who are at the head of the Northwestern Foundry & Supply Company, Detroit. The new company will be closely allied with the Detroit company, and local people of Bellevue subscribed to $40,000 of the capital stock, the Detroit people holding the remainder. Cook Bros., Hammond Building, Detroit, architects and engineers, are preparing plans for the plant, which will produce soil pipe and fittings for the plumbing trade. The plant will consist of a main foundry building 134 x 162 ft.; cleaning and grinding department, 33 x 134 ft.; testing and dipping department, 18 x 37 ft.; engine and machine shop, two stories, 34 x 43 ft.; boiler room, 38 x 42 ft.; wire room, 36 x 125 ft., and storage sheds, 48 x 124 ft. The Detroit company has made a deposit to insure the erection of the plant and the employment of 150 men for a period of five years. The deal with the Bellevue people was effected through the efforts of the Crescent Machinery Company, Williamson Building, Cleveland, and this company will have charge of the purchase of equipment. Contracts for cupola, blowers, shafting, engines, boiler and machinery are to be placed in the near future.

The Lima & Toledo Traction Company, Lima, Ohio, has placed a contract for the erection of a large repair shop which will take care of the repairs on five interurban electric railroad lines centering at Lima. The machine shop equipment, including large lathes, wheel press, boring mill, woodworking machinery and pneumatic tools, will be contracted for in the near future. The new shops will cost about $200,000 with the equipment.

The Pennsylvania Railroad Company's purchasing department recently secured estimates from Cleveland dealers and manufacturers on approximately $60,000 worth of iron working and woodworking machinery for the company's shops at Denison, Columbus and Indianapolis, and it is expected that the placing of these contracts will be announced in the near future. The information comes from apparently authoritative source that the Pennsylvania Railroad is preparing to erect shops at Bedford, on the outskirts of Cleveland, to take care of repair work on cars and locomotives, also to build new cars for the Pennsylvania lines in this district.

Government Purchases.

WASHINGTON, D. C., July 10, 1906.

The Isthmian Canal Commission will soon ask for bids for one 24-in. pillar crank shaper, one 20-in. pillar crank shaper and one 42-in. engine lathe, with 16-ft. bed.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until July 24 for a cutting off machine, hydraulic jacks and other supplies for the Portsmouth, New York and League Island navy yards.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until August 4 for six water tube boilers, feed water heaters, pumps, turbo alternators, generators and other power appliances for the Norfolk Navy Yard.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until July 31 for a quantity of marine straight water tube boilers, with superheaters and spare parts, to be delivered at the Boston and New York navy yards for the United States ships New York and Massachusetts.

The Isthmian Canal Commission will receive bids until July 21 for an engine lathe, pillar crank shapers and other supplies under circular No. 317.

The D'Olier Engineering Company, Philadelphia, Pa., has been awarded the contract for the power plant in connection with the Garden City irrigation project, Kansas, including a 450-kw. power pump, boilers, engines, generators, switchboards, &c.

Under bids opened May 22 for supplies for the navy yards the Handlan-Buck Mfg. Company, St. Louis, Mo., has been awarded class 39, one steel plate gate shear, with direct connected motor, $1700.

The Becker-Brainard Milling Machine Company, Hyde Park, Mass., has been awarded class 2, one milling machine, $1433, under bids opened May 21, circular No. 307, for supplies for the Isthmian Canal Commission.

The following awards have been made for supplies for the navy yards under opening of June 19:

Toledo Machine & Tool Company, Toledo, Ohio, class 31, one power trimming press, $975.

Manning, Maxwell & Moore, New York, class 34, one pattern makers' wood lathe, $625.

The following awards have been made for machinery for the navy yards, bids for which were opened June 26:

J. H. Leonard & Co., New York, class 72, suction pump, force pump, rivet forge, &c., $53.75.

General Electric Company, Schenectady, N. Y., class 142, one electric generating set, $685; class 196, one induction motor, $285.

Handlan-Buck Mfg. Company, St. Louis, Mo., class 199, 25 rivet forges, $121.25.

Crocker-Wheeler Company, Ampere, N. J., class 195, two ¼-hp. motors, $121.50.

T. A. McMann's Sons, New York, class 200, 12 blacksmiths' forges, $414.

H. A. Rogers Company, New York, class 201, 22 hydraulic jacks, $1784.09.

Link-Belt Engineering Company, Philadelphia, Pa., drives for lathes, $334.60.

Brown Hoisting Machinery Company, New York, class 214, one overhead trolley track and hoist, $298.

Montgomery & Co., New York, class 280, 22 hydraulic jacks, $730.

F. S. Banks & Co., New York, class 283, one valve reseating machine, $250.

Manhattan Supply Company, New York, class 284, two valve reseating machines, $265.

William L. Sargent, Fitchburg, Mass., class 458, one special milling machine, $850.

Drew Machinery Agency, Manchester, N. H., class 460, one molding machine, $235; class 461, one carving and molding machine, $267; class 463, one jointing and hand planing machine, $119.

Niles-Bement-Pond Company, New York, class 491, one semiuniversal radial drilling machine, $730; class 493, one upright drill, $484; class 500, one electrically driven crank shaper, $1038; class 501, one pillar shaper, $183.

Manning, Maxwell & Moore, New York, class 497, one motor driven engine lathe, $1375; class 499, one metal cutting and band saw, $425; class 502, one hydraulic shaft straightener, $225.40.

Prentiss Tool & Supply Company, New York, class 496, one motor driven sliding bed gap lathe, $1668; class 505, one motor driven sprue or gate cutter, $510.

Bridgeport Safety Emery Wheel Company, Bridgeport, Conn., class 494, one motor driven emery grinder, $303.80.

Garvin Machine Company, New York, class 503, one universal miller, $747.50.

Class 492, one electrically driven sensitive drill, and class 495, one electrically driven wet emery tool grinder, will be purchased in open market.

Trade Publications.

Pneumatic Tools.—Independent Pneumatic Tool Company, First National Bank Building, Chicago. Circular No. 6 deals with the Thor pneumatic tools, including chipping and calking hammers, one-piece long-stroke riveting hammers, pneumatic drills and boring machines and air turbines. The tools are described at some length and tables of sizes and capacities are included. Illustrated descriptions of the Thor hammers and drills were given in *The Iron Age*, May 24, 1906, and the Thor air turbine, as applied to the driving of a portable saw, in the issue of June 21.

Gasoline Automobiles.—Association of Licensed Automobile Manufacturers, 7 East Forty-second street, New York City. 1906 edition of the Hand-Book of Gasoline Automobiles. Size, 5½ x 7½ inches; pages, 140. Contains illustrations and specifications of the automobiles manufactured by those in the association, and affords a handy comparison of the various points enabling the intending purchaser to select the car best adapted to his particular requirements. Two hundred and sixty-two different models, the product of 44 different makers, are shown; of these 31 are American and 13 foreign.

Steam Pumps.—Dean Bros. Steam Pump Works, Indianapolis, Ind. Circular No. 54. Concerns the Atlantic type boiler feeders or pressure pumps. While particularly intended for marine service pumps, with certain modifications, they are especially suitable for power plants where high grade machinery is desired. They are intended for working pressures up to 250 pounds and for operation with either saturated or superheated steam. The pumps are built with either compound or simple steam ends, either in single units or in pairs, with or without special connecting pipes and fittings. In all combinations each unit is single style, double acting, vertical piston pattern, and long stroke.

Pull Countershafts.—Mossberg Wrench Company, Central Falls, R. I. Pamphlet. Contains illustrated descriptions of the recently invented "Sim-Pull" countershafts and "Multi-Pull" belt shifters. These being devices for stopping and starting the machines from which they are driven by alternate pulls on a pendant cord. Both were described in *The Iron Age* April 12, 1906.

Thermit.—Goldschmidt Thermit Company, 43 Exchange place, New York City. Pamphlet. Explains a few of the things that can be done with thermit, including the welding of rails; repairing of broken parts of locomotives; butt welding pipe, bars and rods; marine repairs and general repair work, including the repairing of steel castings and forgings, and also shows how small flaws in castings may be repaired, and how dull iron may be revived by its use in the ladle. An inserted leaf gives a condensed report on tensile tests of thermit welded steel bars, made by the Fore River Ship Building Company, Quincy, Mass., recently.

Elevators.—Sidney Elevator Mfg. Company, Sidney, Ohio. Catalogue and leaflets. Catalogue G contains illustrations and brief descriptions of various types of elevators, including dumb waiters, passenger elevators, hand and power freight elevators (the latter operated by steam, gas or electric power), carriage and sidewalk elevators, &c. One of the circulars deals with a farm elevator and dump, another has special reference to prices of elevators, and the others concern passenger elevators, hand elevators for factories, stores, hotels, &c., and electric elevator motors for direct connection or belt drive, floor or ceiling suspension.

Bolt Cutters.—Wells Bros. Company, Greenfield, Mass. Two circulars. One concerns the Little Giant bolt cutters and nut tappers with adjustable pipe dies, and the other spiral fluted burring tools.

Machinery.—Allis-Chalmers Company, Milwaukee, Wis. Circular. Has for its title "The Rise of a Great Company," and contains a reprint from the Annual Trade Review of the Milwaukee *Sentinel*, dealing with the history of the Allis-Chalmers Company.

Cold Saw Cutting Off Machines.—Newton Machine Tool Works, Twenty-third and Vine streets, Philadelphia. Catalogue No. 43. Deals at some length with cold saw cutting off machines, illustrating the variety of sizes and patterns in which they are made. All of these tools have been recently redesigned. The types illustrated range in capacity from 2 to 21 inches and are adapted to the cutting of round and square stock, I-beams, channel bars, &c.; also armor plate, nickel steel and gates or risers on steel castings. All of the machines have automatic feeds and, with the exception of the two small sizes of bar saws, have power quick return to the carriage. Both belt and motor drive are furnished. The latter part of the catalogue shows independent saw sharpening machines.

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HARDWARE

LATER advices concerning the results of the Universal Postal Congress state that the reduction in cost of foreign letter postage will be even more radical than was at first supposed. Not only is the unit of weight increased from ½ ounce to 1 ounce, so that a 5-cent stamp will carry the same weight of letter as the 2-cent stamp in domestic mails, but each additional ounce will cost but 3 cents. Consequently 8 cents will carry 2 ounces and 20 cents will carry 6 ounces, three times the amount which is now permissible under the universal agreement, with its 5 cents for every ½ ounce. In a recent issue we considered the beneficial effect which cheaper foreign postage will have in business. The result, however, will be even more marked than was at first presumed, for the first cable dispatch did not indicate the reduction from 5 to 3 cents on the ounces above the first. It is easy to foresee an enormous increase in the volume of important advertising and other printed commercial matter that will be sent to foreign countries as an outcome of the change, which, however, will not go into effect until October 1, 1907.

A record of customers' hobbies may seem an unusual business asset, but nevertheless it is said by those who have made it a part of their system to pay exceedingly well. Most men have some favorite pastime or something or other to which they are strongly attached and which they like to talk about. With one man it may be fishing, with another yachting, with a third his first baby, while yet another may be working out an original idea for use in business. A manufacturer may be deeply interested in association work, or he may be an advocate of a premium system of wages, or he may have strong ideas on labor questions. The salesman who makes careful note of the individual hobby of each customer or prospective customer and refreshes his memory before calling upon the man from whom he hopes to get business must get closer to the friendly side than the salesman who does not take this sort of thing into account. There is the suggestion of a compliment in remembering a previous conversation, as if it had made a strong impression. A man selling goods makes money for his house through his friendships with customers. There is no better way to make a friend than to be a good listener when need be and to remember what he hears. It requires little work or trouble to jot down a reminder of the topic chosen by the customer, to be referred to before making the next call, if it does not stick in the memory of itself. A card index of such suggestions would be invaluable as an assistance to a new man when it is necessary to make a change in the traveling force. It is with the assistance of little tactful acts that the sort of customer is made who calls up the salesman's house when he wants to buy something without shopping for it through the trade.

Condition of Trade.

The manner in which the trade keeps up its volume, notwithstanding the summer, with its vacations and other incidental interruptions to business, is the subject of frequent remark. While manufacturers are probably not as far behind their orders as they were a month or two ago, and their shipments are made somewhat more promptly, they are, with some few exceptions, working under pressure and unable to accumulate stocks to any great extent. The volume of business is not only exceptional for this time of the year, but would be a large business for any season. Orders are coming in freely from the jobbing trade and the larger retailers, but from the South and Southwest they are noticeably heavy, indicating prosperous conditions and an expanding trade. In this state of things prices are not only well maintained, but in not a few lines advances are taking place. There is, however, a conservative disposition on the part of manufacturers, who refrain from making unnecessary advances in their goods, and as a result the market as a whole is on a moderate level considering the cost of the raw material and labor. Many manufacturers are embarrassed by the difficulty in obtaining Steel, which the mills are unable to supply in sufficient quantities to meet the requirements of their customers. The question as to how the crops will turn out is naturally canvassed with the usual solicitude, as so much depends on the harvests, but fortunately the outlook is promising for an abundant yield. While the great grain crops of the country are of prime significance, there is so much diversity of agricultural interests, and the minor products are of such value and importance that there is little reason to apprehend any serious interruption of existing prosperity on account of any local and partial disappointment in the results of harvest. Enterprise in general certainly continues to manifest itself in liberal expenditures, and while the railroads of the country are almost constantly in the market, and public improvements are made with generous outlay, the manufacturing and commercial classes are extending their facilities, and building in general continues on an almost unprecedented scale. With this condition of things at home it is gratifying to note that the foreign trade of the country is making a new record, in which the products of Iron and Steel occupy a conspicuous place. This résumé of the situation is appropriately supplemented by the following advices from Belknap Hardware & Mfg. Company, Louisville, Ky.:

The trade report for the present week must be in the same strain as those previously written—namely, prospects of good crops, great undertakings on the part of railroads, buildings in cities, development of mines, &c., which conspire to employ labor and increase the earning power and wealth of the country at large.

The market is affected in two ways: First, by the excellent prospects of crops salable at full prices, and at the same time with high rates for money a full interest charge goes on loans. This latter depresses speculation to a degree, but it cannot hold the country down. Various enterprises, which used to offer their securities at 3¾ to 4 per cent., are now offering those of about the same class at a net to the purchaser of 5. There is at once a premium both upon labor and capital; rather an odd combination as it happens. Money is being freely spent, and even school teachers' salaries, which are said to be one of the last to participate in a boom, have been somewhat affected.

All of this good feeling has produced a lack of scrutiny in expenditures in municipal and public affairs, so that we will probably all agree that waste is great in all of our cities. It takes hard times to get us to consider economy, but we have surely got to practice it in the end. The difficulty of getting rid of sinecures is one all municipalities experience. The adhesiveness of an occupant to a soft job is well recognized, but the protection which is thrown around him by the machine and the courts and all the other influences is something to be wondered at.

Chicago.

Midsummer consumption of Hardware products notwithstanding the holiday week fails to record the curtailment of former years, and a recording-breaking month is already anticipated. The passing of the inventory period has already brought an avalanche of orders to Heavy Hardware jobbers, and that stocks are generally low is indicated by the prompt shipments demanded. This is particularly true of Steel Bars and Shapes from store and is accentuated by the crowded condition of mills and their deferred deliveries, large consumers being compelled to buy from stock, and unable to wait for direct shipments. Sales of car lots of both Black and Galvanized Sheets from store are now of almost daily occurrence, nothwithstanding the premiums that are prevailing. In Builders' Hardware no relief is in sight and practically all of the manufacturers are unable to make deliveries in less than three months. In the face of the high record made in building last year, which, with the exception of 1902, nearly doubled the highest record of any previous year, the first six months' period in 1906 shows a considerable increase over the same period in 1905. During the six months just closed, permits were issued for the construction of 5264 buildings, fronting 141,333 feet, and involving a total cost of $36,489,145, against 3651 buildings, 113,088 feet of frontage and $30,208,425, an increase this year of 1613 buildings, 28,245 feet of frontage and $6,280,720. Advances ranging from 5 to 10 per cent. have been made on Rules, Plumbs and Levels, Tri-Squares, Bevels, &c., and tubular goods and deliveries from manufacturers are so slow that jobbers experience much difficulty in keeping up their stocks. The molders' strike, which practically resulted in a stoppage of the manufacture of molders' goods, has been broken and a majority of the works are working at almost full capacity. Shipments are again coming forward and the situation generally is easy.

NOTES ON PRICES.

Wire Nails.—With a very satisfactory volume of business, as a result in part of the restriction of output to conform more nearly to midsummer requirements and also to the scarcity of steel which is affecting the output of some mills unfavorably, the market remains steady and has perhaps a stronger tone. The San Francisco district is requiring a large quantity of Nails, while current demand is excellent for the season. Stocks at mills and in jobbers' hands are reported as being smaller than usual at this season. Concessions of 5 cents per keg from official quotations on desirable orders, are heard of less frequently. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers	$1.85
Carload lots to retail merchants	1.90

New York.—The midsummer dullness is making itself apparent in the seasonable falling off of demand for small lots of Nails from store. Quotations for small lots from store on the basis of $2.10 per keg.

Chicago.—Concessions have now been practically withdrawn, and the market has again been firmly established on the official basis. This is probably due to the curtailment in production which has already taken place, although some of the mills will shortly resume at full capacity to provide stocks for the fall demand. The American Steel & Wire Company now has only a few of its mills idle, and these will resume as soon as an adequate Steel supply is assured. Current demand, considering the season, is above normal, and heavy shipments continue to be made to San Francisco for distribution throughout the territory that suffered from the recent earthquake. Quotations have been reaffirmed, as follows: $2 in car lots to jobbers and $2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—We note a seasonable demand for Wire Nails, and the recent action of the manufacturers in deciding to restrict output to conform as closely as possible to actual demand has had the effect of strengthening the market, which is referred to as being in very satisfactory condition. Stocks held by the mills and jobbers are smaller than usual at this season of the year, Nails continuing to move quite freely. The market is fairly strong, but concessions of 5 cents a keg are made by some mills on desirable orders. Official prices, which are sometimes shaded to the extent of 5 cents a keg, are as follows: Wire Nails, $1.85 in carloads to the large jobbing trade and $1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

Cut Nails.—A number of mills closed down on the first instant for the annual repairs and inventory, and the difficulty of obtaining sufficient Steel Billets for the necessities of the mills has restricted output to a considerable degree, and has strengthened the market to some extent. Some mills making the better class of Nails are unable to fill orders promptly, owing to broken assortments. Mill business is confined largely to filling specifications on contract orders, although new business is of fair volume. The $1.80 base price is, however, reported as being shaded 5 cents per keg by some mills outside the association. Official quotations are as follows: $1.80, base, for carload lots, f.o.b. Pittsburgh; $1.85 for less than carloads, f.o.b. Pittsburgh; $1.95 for carload lots, on dock, New York; $2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

New York.—Local demand is somewhat light, and quotations remain unchanged. Quotations for small lots from store are on the basis of $2 per keg.

Chicago.—The situation in Cut Nails is practically unchanged, with new business only fair. Specifications on old contracts continue in good volume. Quotations are as follows: Steel Cut Nails in car lots, $1.90 to $1.95; less than car lots, $2; Iron Cut Nails, $2 to $2.05 in car lots; less than car lots, $2.10.

Pittsburgh.—The shut down of a number of the Cut Nail mills on July 1 for inventory and repairs has restricted production very materially, and in addition a continued shortage of Steel Billets is also affecting output, these two conditions having the natural effect of strengthening prices. There is a fair seasonable demand for Cut Nails, but the mills are running mostly on contracts, on which buyers are specifying freely. We quote Cut Nails at $1.75, base, f.o.b. Pittsburgh, for carload lots, and $1.85 in less than carload lots. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

Barb Wire.—Railroads continue to be the largest customers, although from other sources a fair demand is reported by the mills. Official quotations are reported as sometimes being shaded about 5 cents per 100 pounds on desirable orders. Quotations are as follows: To jobbers, Chicago, car lots, Painted, $2.15; Galvanized, $2.45. To retailers, car lots, Painted, $2.20; Galvanized, $2.50. Retailers, less than car lots, Painted, $2.30; Galvanized, $2.60. Staples, Bright, in car lots to jobbers, $2.10; Galvanized, $2.40; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Chicago.—Railroads are specifying freely for material to be used on extensions that are being made throughout the West and Northwest, and jobbers report that the current requirements in agricultural communities are above normal at this season of the year. Quotations are firmly maintained, as follews: To jobbers, Chicago, car lots, Painted, $2.15; Galvanized, $2.45. To retailers, car lots, Painted, $2.20; Galvanized, $2.50. Retailers, less than car lots, Painted, $2.30; Galvanized, $2.60. Staples, Bright, in car lots to jobbers, $2.10; Galvanized, $2.40; car lots to retailers, 10c. extra, with an additional 5c. for less than car lots.

Pittsburgh.—The railroads continue to be heavy purchasers, and we note a fair seasonable demand from other consumers. A material improvement in demand is expected early in August, while stocks held by the mills and jobbers are said to be lighter than usual at this season. Prices are fairly firm, but concessions of about

5c. are being made on attractive orders. Official prices, which are sometimes shaded about 5c. per 100 lb., are as follows: Painted Barb Wire, $2, and Galvanized, $2.30, in carload lots to the large jobbing trade, with the usual advance of $1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in ten days.

Smooth Fence Wire.—Placing of contracts by large consumers of Wire to cover their requirements for the coming year is a feature of the market at this time, while the amount of Wire being shipped by the mills is large. Reports of occasional concessions of 5c. per 100 lb. from official quotations on desirable orders is noted. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in ten days:

Jobbers, carloads	$1.70
Retailers, carloads	1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago.—The mills are now receiving large contracts from Wire and Fence manufacturers covering their requirements to July 1 next year. It is expected that all of this tonnage will be booked before the end of the month. Specifications from other consumers are heavy and practically no stocks are being accumulated by the mills. Prices continue to be well maintained, as follows: To jobbers, $1.85, f.o.b. Chicago, in car lots, and car lots to retailers, $1.90.

Pittsburgh.—The amount of tonnage being shipped by the mills at present is larger than usual at this season of the year. Some Fence manufacturers are now placing contracts for their requirements of Fence Wire covering the next year. Specifications on other contracts are coming in quite freely. The market is fairly strong, but official prices are sometimes shaded 5 cents per 100 lbs. on desirable orders. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.70
Retailers, carloads	1.75

The above prices are for base numbers, 6 to 9.

Henry Disston & Sons.—We give below the discount sheet of Henry Disston & Sons, Philadelphia, which was issued with their new catalogue and bears date July 2. It will be observed that a good many changes are made in discounts, especially of Hand Saws:

	Discount.
Inserted Tooth Saws, Points and Holders	50 %
Rift Saws	50 %
Inserted Tooth Saws and Teeth (American Saw Company's patterns)	50 %
Machine for Sharpening Inserted Teeth	50 %
Solid Tooth Circular Saws	50 %
Circular Saw Repairs	50 %
Shingle and Heading Saws	50 %
Segment Veneer Saws and Repairs	50 %
Circular Miter Saws	50 %
Concave Saws	50 %
Grooving Saws	50 %
Cork, Paper and Cloth Knives	50 %
Circular Milling Saws for Newton and other Milling Machines	50 %
Circular Saws and Disks for Hot or Cold Metal	50 %
Circular Slate Saws	50 %
Screw Slotting Cutters	50 %
Metal Slitting Saws	50 %
Circular Milling Saws for "Bryant" and "Higley" machines	50 %
Circular Milling Saws, Inserted Tooth	50 %
Mill and Mulay Saws	50 %
Gang and Deal Saws	50 %
Drag Saws	50 %
Pit, Whip and Futtock Saws	50 %
Tiller Handles	50 %
Pond and Hand Ice Saws	50 %
Cross Cut Saws.	
Diamond Point Vim and Vim Champion	45 %
Oriole, Novo, Diamond Tooth	45 %
Great American Nos. 1 and 2, Lumberman	45 %
Lancet, Perforated Lance, Electric	45 %
Fleam, Tenon, Plain	45 %
Champion Nos. 1 and 2, Tuttle, Miner's	45 %
Caribou, Beaver, Felling No. 1	45 %
Sterling, International, International Felling	45 %
Humboldt, California, Toledo Blade, Sabine	45 %
Nevada, Nevada Felling, Lancet	45 %
Pacific, Oregon Perforated, Oregon not Perforated	45 %
"Triumph" or Narrow Champion, Great American and Toledo	50 %
One-man Perforated Lance Nos. 1 and 2	45 %
One-man Great American	45 %
One-man Champion Nos. 1 and 2	45 %
One-man Keystone Champion No. 3	45 %
One-man Lumberman	45 %
One-man Miner's	45 %
Cross Cut Saw Handles	50 %
Cleaner Tooth Gauges	30 %
Universal Cross Cut Saw Tool	30 %
Saw Mandrels and Speed Indicator	30 %
Saw Gummers and Cutters	30 %
Band Saw Swage	30 %
Gumming Press and Hand Shear	30 %
Swages	30 %
Hammers, Anvils, Swage Bars, Setting Stake	Net.
Straight Edges, Brazing Clamps, Side Files	30 %
Saw Sets	30 %
Saw Clamps and Filing Guide	30 %
Hand Saw Jointer	30 %
Wire Gauges and Nail Gauges	30 %
Band Saws, 2 to 18 in. wide	60 %
Band Saws ¼ to 1¾ in. wide	60 %
German Web Saws	25 %
Turning and Fay Webs	25 %
Felloe and Canadian Webs	25 %
Gin Roller and Doctor Blades	25 %
Hand Saws.	
Nos. 112, 12, 99, 9, 16, D-100, D-8, 120, 76, 77 and 8	25 %
Nos. 7, 107, 107½, 3, 1, 0, 00	30 %
Combination Saws	30 %
Gauge Saws, Movable Back Saws and Ship Carpenters' Saws	25 %
"Hand" Hack Saws and Plumbers' Saws	25 %
Compass, Nest, Keyhole and Coping	25 %
Pattern Makers', Dovetail, Turkish, Stairbuilders' and Joiners' Saws	25 %
Saw Handles and Screws	25 %
Pruning Saws	25 %
Currier Blades and Cabinet Scrapers	25 %
Back Saws	25 %
Wood Saw Blades	25 %
Wood Saw Rods	25 %
Framed Wood Saws, Wood Saw Frames and Saw Bucks	25 %
Butcher Saws, Deborning Saws and Saw Knives	30 %
Kitchen Saws	30 %
Butcher Saw Blades	30 %
Hack Saw Frames	30 %
Disston's Concave Ground Hack Saw Blades	25 %
Keystone, Chromol, Flexible Back and Machine Hack Saw Blades	35 %
Plastering, Corner, Circle, Edging Trowels	20 %
Brick, Pointing, Gauging Trowels	25 %
Garden Trowels	30 %
"Standard" Brand Trowels	30 %
"Quaker City" Brand Trowels	30 %
Coke Trowels	30 %
Cane, Corn and Hedge Knives	25 %
Post Hole Diggers	25 %
Pruning Hook and Saw	25 %
Machinists' Rules, Squares, Bevels, Levels, Gauges, Straight Edges	20 %
No. 3 Bevel, Nos. 5½ and 11 Squares	67½ %
Try Squares and Bevels	67½ %
Mortise Gauges	67½ %
Shafting and Pocket Levels	67½ %
Plumbs and Levels	67½ %
Trammel Points and Plumb Bobs	67½ %
Screw Drivers, Handles and Ferrules	70 %
Slaw Cutters, Vegetable Cutters, Corn Graters, Potato Shredders and Crout Cutters	35 %
Files and Rasps, List of November 1, 1899	75 %
Superfine Files	50 %

Wire Picture Cord.—A new price list on Braided Wire Picture Cord, which has been expected by the trade for several weeks, was adopted July 10, and was put into effect immediately. It represents considerable advances on nearly all numbers of tinned Cord, and large advances on gold and silver. The changes on brass Cord are comparatively slight. A feature of the new list is the regulation of the prices of 25-yard coils, per dozen, so as to be just double the price of the same sizes of Cord in 25 foot coils. No change in discount has been made, and the market may be referred to as represented in a general way by a discount of about 85 and 10 per cent. from the new list, which is as follows:

BRAIDED WIRE PICTURE CORD.

Tinned.

	Nos. 0.	1.	2.	3.
25-ft. coils, per dozen coils	$1.25	1.75	2.50	3.25
25-yard coils, per dozen coils	2.50	3.50	5.00	6.50
	Nos. 4.	5.	6.	7. 8.
25-ft. coils, per dozen coils	$4.00	5.00	6.00	7.25 8.50
25-yard coils, per dozen coils	8.00	10.00	12.00	14.50 17.00

Brass.

	Nos. 10.	11.	12.	13.
25-ft. coils, per dozen coils	$3.00	4.50	6.50	9.00
25-yard coils, per dozen coils	6.00	9.00	13.00	18.00
	Nos. 14.	15.	16.	17. 18.
25-ft. coils, per dozen coils	$12.00	16.00	20.00	25.00 30.00
25-yard coils, per dozen coils	24.00	32.00	40.00	50.00 60.00

Gold or Silver.

	Nos. 20.	21.	22.	23.
25-ft. coils, per dozen coils	$9.00	11.25	13.75	17.50
25-yard coils, per dozen coils	18.00	22.50	27.50	35.00
	Nos. 24.	25.	26.	27. 28.
25-ft. coils, per dozen coils	$22.50	27.50	32.50	37.50 42.50
25-yard coils, per dozen coils	45.00	55.00	65.00	75.00 85.00

Anvils.—An advance of half a cent per pound in the price of wrought iron Anvils has been made by concerted action on the part of leading manufacturers. The advance is attributed to the increased cost of raw material.

Registers.—Advanced prices on Registers have been put in effect by the leading manufacturers, making the discount to good retail trade 70 per cent. instead of 70

and 10 per cent., as previously ruling. This applies to japanned, electro plated and bronzed Registers. On white porcelain enamel the discount is 60 per cent. and on solid brass or bronze metal 40 and 10 per cent. The volume of business is referred to as exceptionally large for this season of the year.

Stanley Rule & Level Company.—Under date of July 2, Stanley Rule & Level Company, New Britain, Conn., has issued a new condensed price-list in which a number of changes of list are incorporated, to which attention is directed in a circular letter accompanying the price-list. On certain lines new discounts are also in effect, representing advances approximating 5 per cent.

Binder Twine.—As the harvesting period is drawing to a close, it appears that the consumption of Twine will be somewhat under the average, owing to the light straw and shortage of some of the crops, which has restricted the demand to some extent since late in May. The price which is demanded for Twine will, from now on, depend to a greater or less extent upon stocks in the hands of sellers and their eagerness to dispose of them. While Fiber has been weak and the amount of Twine required smaller, the market has not shown any sudden fluctuations, but has held remarkably steady. The lowest price quoted as a regular quotation is reported from the West as 9 cents for Sisal and Standard. Generally prices seem to range from 9¼ to 10 cents per pound.

Rope.—Manufacturers report that business thus far the present month has shown an improvement over the June demand and that inquiries from prospective buyers are encouraging. Prices are reported to be without perceptible change, except that Jute products are a little easier. Quotations are as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9 cents; No. 2 quality, 7¾ cents per pound.

Window Glass.—The hand blown Glass factories are about all, if not entirely, out of blast, and the machine blown factories still working will not affect the market to any considerable extent. Stocks of single strength Glass in manufacturers' hands are becoming light, and full assortments will become harder to obtain as the season progresses. As an instance of this, one manufacturer of hand blown Glass reports his stock of single strength light and has advanced price to 90 per cent. discount. Orders will be subject to stock and assortment, as he will not let desirable sizes go unless a fair proportion of less desirable Glass is included in orders. A meeting of the Jobbers' Association was held last week at Boston, but no change in prices was made. This week a meeting of Glass workers will be held to discuss labor problems. There will probably be the usual series of conferences between workmen and manufacturers on the wage question during the summer and from the shortage of workmen during the late fire it would appear that the workmen will be successful in obtaining an advance in wages. Quotations from jobbers' list in this section are as follows. Greater New York, single, 90 and 5; double, 90 and 10 per cent. discount. Eastern district, except the Boston district, 90 and 10 per cent. discount for all sizes of single and double strength. In the Boston district quotations are reported as being 90 and 15 for all sizes of single and double strength.

Linseed Oil.—A majority of the mills have shut down because their storage capacity is exhausted. It is asserted that they would be willing to operate at a loss on Oil for the sake of selling Linseed Cake, which is in active demand at comparatively high prices. At the present price of Seed it is stated that current quotations of Oil show a loss to manufacturers. Both manufacturers and dealers are at a loss to account for the continued restricted demand for Oil. Quotations are as follows, according to quantity and seller: City Raw, 39 to 40 cents per gallon; out of town Raw, 36 to 39 cents per gallon. Boiled Oil is 1 to 2 cents per gallon over Raw.

Spirits Turpentine.—Local demand has been confined to jobbing lots this week, as reports from Southern markets show lack of strength. Prices have fallen off about ½ cent per gallon since our report of last week. New York quotations are as follows, according to quantity: Oil Barrels, 59¾ to 60¼ cents; Machine made Barrels, 60¼ to 60¾ cents per gallon.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our catalogue department in New York; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

ENTERPRISE FOUNDRY & FENCE COMPANY, Indianapolis, Ind.: Catalogue N, relating to Iron Picket and Wire Fences, Tubular Railings, Crestings, Hitching Posts, Area Gratings, Iron and Wire Window Guards, Wrought Iron Gratings, Lawn Vases, Settees, &c.

THE OSBORN MFG. COMPANY, Cleveland, Ohio: Booklet illustrating and describing Economy Wire Wheel Brushes.

THE M. SEWARD & SON COMPANY, New Haven, Conn.; Illustrated price-list of Carriage Hardware, including Clips, Dash Feet, Brace Ends, Foot Rails, Body Hangers, Yokes and Braces, Gear Irons, Fifth Wheels, &c.

HEITLAND GRATE & MANTEL COMPANY Quincy, Ill.: Catalogue F, devoted to Wood Mantels; Catalogue K. Grates, Fireplace Furnishings, Brick and Tile Mantels, Tiled Bathrooms, &c.; Circular illustrating and describing Hot Water Circulating Fireplace Heater.

THE HUMPHRYES MFG. COMPANY, Mansfield, Ohio: A small catalogue devoted to Pumps. While the catalogue does not show the company's entire line of Pumps, it contains the newest and most popular designs.

STOWELL MFG. COMPANY, 459-461 West Side avenue, Jersey City, N. J.: Catalogue devoted to the following kinds of Roofing: Stag, Feldspar, Cork, Concrete, Monarch, Eagle, Nonpareil, Gravel, Asbestos and Saturated Felts. The company also manufactures Asphalt Metal Paint, Asphalt Roofing Cement and Elastic Rubber Roof Cement.

W. C. HELLER & Co., Montpelier, Ohio: Catalogue illustrating the firm's Simple System of displaying Hardware in connection with their Steel Hardware Shelf Boxes, Screw, Bolt and Sundry Cases.

V. CLAD & SONS, Philadelphia, Pa.: Catalogues relating to Confectioners' Jacket Kettles, Revolving Pans, Copper Work, &c., Fruit Drop Frames, Mixers for confectioners' use and Bakers' Tools.

SEALSKIN SWATY STROP COMPANY, Ottumwa, Iowa: Illustrated descriptive matter, printed in colors, relating to the Sealskin Swaty Razor Strops in two sizes. The company will be pleased to furnish advertising booklets, store signs, &c., for the use of retail merchants.

C. M. KEMP MFG. COMPANY, 405-413 East Oliver street, Baltimore, Md.: Catalogue relating to Plumbers' Specialties, including Gas Machines, Cellar Drainer, Gas Mixer, Pipe Vises, Soil Pipe Plug, Automatic Air Blast, Long Screws, Hydrants, Ratchet Stocks and Gas Fire Pots.

J. STEVENS ARMS & TOOL COMPANY, Chicopee, Falls, Mass.: Illustrated booklet devoted to Little Scout and Repeating Gallery Rifles; also Double Barrel Hammerless Shotguns.

THE WIRE GOODS COMPANY, Worcester, Mass.: Booklet referring to Coat and Hat, Harness and Fire Pail Wire Hooks, of which there are seven finishes and 115 varieties.

GILBERT HUNT COMPANY, Walla Walla, Wash.: Catalogue and price-list No. 18, devoted to illustrations and descriptions of the Washington Steam Thresher, Barley Rolls, Feed Mills, Barley Crusher, &c.

THE LYMAN GUN SIGHT CORPORATION, Middlefield, Conn.: Illustrated catalogue of the Lyman Rifle and Shot Gun Sights.

HENRY E. DEAN & Co., Worcester, Mass.: Illustrated circulars devoted to Snow Guards and Carpet and Rug Beaters.

L. B. WORDEN, Penn Yan, N. Y.: Catalogue illustrating the Worden Plumb, Rule and Level.

SEARLS MFG. COMPANY, Newark, N. J., represented by Frederic Klages, 127 Duane street, New York: Four-page illustrated folder, supplement to catalogue No. 19, of

Bathroom and Household Specialties in brass and nickel plate.

HUNT, HELM, FERRIS & Co., Harvard, Ill.: Catalogue of Lawn Mowers illustrated with color plates.

SUPPLEE HARDWARE COMPANY, Philadelphia: Catalogue of Pennsylvania Lawn Mowers, with booklet referring to Golf Hand and Horse Mowers, with grass boxes, and circular of "ready made ads."

ORGANIZING MERCHANTS IN GEORGIA AND WEST VIRGINIA.

A NUMBER of retail Hardware merchants met in Dublin, Ga., on the 30th ult., with a view to forming a State Hardware Association. A temporary organization was perfected with the following officers: W. G. Raines, Statesboro, president, and B. W. Gilbert, Dublin, and C. M. Tillman, McRae, secretaries. July 17 was selected as the date for a meeting at Macon, to which all the Hardwaremen of the State are cordially invited, when it is hoped to effect a permanent organization. H. G. Stevens, Dublin, was named a committee of one to make arrangements for hotel accommodations at Macon and also to confer with railroad officials with a view to securing reduced rates for those who desire to attend the meeting. We understand that the movement has made an auspicious start, and that an attendance of more than 100 merchants is confidently expected at the Macon gathering. Mr. Raines, the temporary president, will be pleased to respond to any inquiries concerning the meeting.

As a result of some previous discussion of the subject an informal meeting of retail Hardware merchants from Fairmont, Morgantown, Shinnston, Terra Alta, Kingwood and Point Marion, W. Va., was held at Kingwood on the 27th ult., to consider the formation of a State retail Hardware association. All of those present favoring the association idea a temporary organization was determined on, the following officers being chosen: F. R. Clelland, Marion Hardware Company, Fairmont, president; John H. Krepps, H. C. Baker Hardware Company, Morgantown, secretary, and John H. Morgan, Morgantown Hardware Company, Morgantown, treasurer. These three officers were constituted a committee to make arrangements for the formation of a permanent body and were authorized to select a time and place for a general meeting which all of the Hardware merchants in the State will be asked to attend. It is thought that this meeting will be held at Wheeling in September.

THE WARD FENCE COMPANY.

THE WARD FENCE COMPANY, Portland, Ind., is erecting a new plant at Marion, Ind., which will be completed some time in August. The operations of the company will then be transferred from Portland to Marion. The company's catalogue No. 20 illustrates the varied line of ornamental wrought iron and steel picket and wire fence which it is offering to the trade. Besides over 30 full page plates showing different designs offered, the book contains a number of photographic views of public grounds and private estates on which the company's fence has been installed. Full practical information is given in regard to placing orders, with directions for measuring and estimating and setting fence. The company refers to fencing as a satisfactory and profitable specialty for hardware merchants, and states that it always co-operates with the trade by referring inquiries to its nearest customer. It is suggested that merchants need not carry heavy stocks of this fence, as sales can readily be made from catalogue. A small stock, however, assists in building up a trade. The company is also making Graduated Diamond Mesh Farm Fencing, and expects by fall to be turning out a square mesh fence, thus giving it a complete line.

TRADE ITEMS.

THE INDIANA EDGE TOOL COMPANY, Gas City, Ind., has issued a 20-page booklet relating to its line of Agricultural Edge Tools. The catalogue contains illustrations of Hay Knives, Corn Knives, Grass Hooks, Corn Hooks and Hedge Knives. The company is represented in New York by A. G. Sherman, with offices at 168 Church street, and in St. Louis by A. M. Wooster, who is located at 1017 Chemical Building.

THE CAMERON STOVE COMPANY, Richmond, Va., was incorporated a few months since for the manufacture of the Cameron Steel Ranges and Airtight Heaters. The Cameron Steel Range is of heavy construction and modern design, has an unusually large oven and also large flues, and will burn hard or soft coal as well as wood.

THE WILLYS-CREW MOTOR COMPANY has been organized to take over the Automobile end of the Automobile and Sporting Goods business, which has been successfully conducted for a number of years by the Elmira Arms Company, Elmira, N. Y. The officers who have managed the affairs of the Arms Company will, with one addition, continue the management of both the Elmira Arms Company and the Willys-Crew Motor Company. It is expected that the business will be materially increased and will include the handling of commercial as well as pleasure Motor Vehicles and a full line of supplies and accessories. The garage is said to be the largest in southern or central New York and is fitted with every convenience. The repair branch of the business is completely equipped with the latest machinery and also includes vulcanizing and painting departments, so that a rig may be fitted with any repair from the smallest to a complete rebuilding. The officers of the new company are J. N. Willys, president; W. O. Crew, secretary; Guy W. Shoemaker, treasurer.

THE SAMUEL WINSLOW SKATE MFG. COMPANY, Worcester, Mass., has opened an office and sales room at 84 Chambers street, New York, where a full stock will be carried for the convenience of the trade. The New York branch will be under the efficient management of J. J. Young, who for about 12 years has been identified with the Skate line.

EDMOND BEALL of Alton, Ill., who is well and favorably known to the trade as president of Beall Bros. and Beall Shovel Company, also takes a conspicuous part in movements which have to do with the local welfare. Besides being Mayor of the city, Mr. Beall is president of the Civic Improvement League, Home Building Association and Manufacturers' Association. He is also president of the Mining Tool Manufacturers' Association.

THE PITTSBURGH AUTOMATIC VISE & TOOL COMPANY, McChesney Building, Pittsburgh, works at Carnegie, Pa., was recently incorporated under a Pennsylvania charter with a capital of $25,000. The officers are G. P. Blackiston, president; A. H. Blackiston, vice-president, and F. D. Blackiston, secretary and treasurer. The company will manufacture the Long patent universal double and single swivel vises and also wrenches and gigs.

THE RALPH BROWN COMPANY, San Francisco, Cal., jobber of Cutlery, Fishing Tackle, Sporting Goods, Ammunition, Hardware and associated lines, is now in possession of a fine property at Fifth and Tehema streets, in the center of the business section, and is in full operation. The company has a 10-year lease of the premises and much of its new stock is on hand and the balance en route. Special emphasis is laid on its ability promptly to deliver goods ordered.

WHAT is styled the "Official Handbook of the New York State Association of Retail Hardware Dealers" has recently been issued. Copies have been mailed not only to the members of the association, but also to Hardware merchants generally throughout the State. The book, which is an attractive and well-printed volume of more than 100 large pages, gives the official minutes and proceedings of the fourth annual convention of the association, held at Binghamton last February, together with a list of the members. It is embellished with well-executed portraits of former presidents of the association and of the present staff of officers and directors. Advertising announcements of manufacturers and jobbers complete the volume. John B. Foley of Syracuse is the efficient secretary of the New York Association.

TRADE WINNING METHODS.

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

PAINT WINDOW OF KNAPP-CRAMER HARD WARE COMPANY.

THE photograph reproduced herewith shows a window display recently made by Knapp-Cramer Hardware Company, North Tonawanda, N. Y. Not long ago this company remodeled the interior of its store and improved its facilities for handling and displaying goods, with results which are reported as highly gratifying. Judging from its own experience, the firm believes that Hardware merchants who continue doing business on old-time methods in dingy, unattractive stores, with dirty and badly arranged stocks, are making a great mistake.

One evidence of its enterprising and aggressive methods is its readiness to take on new lines which may be handled conveniently and with profit by the Hardware-

Paint Window Display of Knapp-Cramer Hardware Company.

man. Such a line is Ready Mixed Paint, which is the subject of the accompanying display. It includes Prepared Paint for every conceivable use. The background of the window was a large American flag, to which was attached the following pat sign: "These Colors Never Run." On the right is a pile of old shoes, with a card reading: "Worn out looking for good Paint. They found it here." The balances on the left have on one arm a lump of coal bronzed over to represent gold, and on the other a can of Paint with a card which reads: "Worth its weight in gold." At the extreme left is a weather beaten wooden chair, half freshly painted, the other half left rough for comparison. It may be added that the display was favorably received and that Paint sales were materially quickened.

LAWN MOWER WINDOW DISPLAY.

BY F. B. M.

DO not content yourself by just having a stock of Lawn Mowers on hand. Make a window display by placing one in your window, with the emphasis on the one. Now a simple machine standing in a window on a bare wood floor would look somewhat out of place, and it is doubtful if it would add to your sales. As a Lawn Mower is intended to cut grass, and not to plane off the paint on the boards of your show window floor, would it not be advisable to place it on a more suitable base?

Paper Grass

is lasting and simple to make from the proper colored tissue paper. Take one sheet at a time and fold it into strips about 3 in. wide when doubled up and the length of the sheet. Then fold it the other way up, until it represents a mass of paper about 4 in. long and 3 in. deep. Next start on one of the long sides and cut little angular slits in the paper about 2 in. deep, being careful not to cut through, so as to leave the paper in the form of connected blades of grass. Then open up the paper, cut apart any points of grass that have stuck together, fold out and paste on green tissue paper base, so as to partly cover a portion of the window floor. This will represent the uncut grass.

Imitate a Swath of Cut Grass

as if the machine had just cut it, by covering the floor of the window with flat pieces of grass colored paper, upon which drop little short clippings of loose blades of grass made in the same manner as the tall grass, only folding the paper smaller and cutting clear through, remembering that no blade should be perfect after it has passed through the machine. Therefore these should all be little bits of strips of paper just scattered over the grass.

But if you exhibit a machine with canvas bag for catching the grass, these chips should be thrown in the bag, and we have to resort to a different way of imitating the mowed portion of the lawn, but I found by experimenting that even this can be accomplished in paper.

Punch Holes in Paper

with a Brad Awl by laying several sheets at a time on a very soft pine board the top of a packing box will answer. Just punch them in any old way, the more holes and the closer they are together the better. Then take up and separate the sheets carefully, laying them down on the window floor with the punched side underneath. Turning the paper thus leaves a little raised ragged edge surrounding each hole, which produces quite a realistic freshly mown lawn.

The long grass should be placed in the background and also just ahead of the machine; following and in the front of the window should be placed the punched sheets or cut grass. A stuffed figure of a man pushing the Mower will make the design still more attractive, but you will find the grass the most important adjunct to the display.

A SOMEWHAT novel and apparently effective method of circularizing is being used by American Fork & Hoe Company, Cleveland, Ohio, in calling the attention of merchants to advertisements in trade journals relating to special goods of its manufacture. One of these circulars recently issued emphasizes the opportunities for selling the Abbott Dock Cutter, which has been prominently advertised. A suggestion is made that merchants address their jobbers, or if the goods cannot be obtained in this way that they should communicate directly with the manufacturer.

A RHODE ISLAND STORE'S BUSINESS METHODS.

We are particular to keep up our stock, for nothing discourages a prospective customer more than to find his merchant continually "out" of staple articles. This one thing will lose more customers than a merchant can gain in a long time. Another rule we have made is to keep not only what all the rest of the stores keep, but also what they don't keep. That is, there are many odd things that there is very little sale for but occasionally somebody will call for them, and if you have them when they are needed the very fact of their being able to get them will repay you for what it costs to carry them. Even if there is no money directly made by the transaction, you have probably made a friend and a good customer.

In a place of this size we are thoroughly convinced that a small stock and large assortment is the right thing.

We also believe in a clean, orderly store; clean and attractive show windows, and a change in the window display as often as it fails to attract passersby.

SOME of the principles which govern the Wardwell Lumber Company, Bristol, R. I., in the conduct of its Hardware, Lumber, Paint and Building Material business are enumerated above. In the effort to keep itself and its wares before the public the company makes good use of circular letters, illustrated postal cards, &c. These are sent to names on

A Mailing List

which has been made up from the real estate and registry sources, supplemented by the company's accounts and personal knowledge of people. When a stranger comes in from some nearby place his name and address are obtained by the intimation that the company sends more or less advertising matter through the mails, and would be glad to have the privilege of including him among those who receive it.

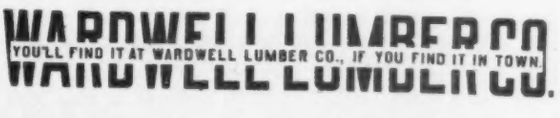
The Post Cards

which the company send out are embellished on the backs with views of the company's store. One card gives an exterior view of the establishment. Others illustrate the interior of the store. These views occupy most of the space on the card back, the remainder being used for a note to some such effect as "Everything in the Lumber line," "This is where you buy the best Paints, Oils, Varnish and Painters' Supplies," &c., or other catchy and easily read and understood phrases.

One morning a well-known citizen prominently identified with one of the churches dropped into the store to acknowledge the receipt of a card which had been sent to him. He said he had been thinking for some time of shingling the church, and he wondered how the firm had been able to read his thoughts, as the card he had received bore the (to him) suggestive inscription, "Shingle! Shingle!! Shingle!!!"

Good Use

is also made by the company of several sizes of an electrotype as reproduced herewith:



This appears on the firms' stationery and labels, in newspaper advertisements, &c. Through continued and persistent use the slogan "You'll find it at Wardwell Lumber Company if you find it in town" has become a familiar saying throughout the town, and the remembrance of it has doubtless directed many to the store when in need of something which was considered hard to find.

Circular Letters

calling attention to season lines are often sent out. For these letters a good quality of paper is used, with the regular letter head of the firm. The letters are typewritten, a manifold press being used, and are always enclosed in green envelopes. Pains are taken in preparing these letters, good clean copies being made, and each letter signed with pen and ink. The firm realizes that the first impression made by a letter of this sort has much to do with its effectiveness in commanding perusal by the recipient, and tries to make this impression a favorable one.

THE MANAGEMENT OF CREDITS.

This is an important question to which most Hardwaremen do not give the consideration to which it is entitled.

BY CLARFIELD.

A GREAT many Hardware merchants lose more than is necessary upon bad accounts because they don't systematize their credit department carefully enough and exercise enough judgment in allowing credit. It often happens in the smaller places that credit is allowed purely for personal reasons and against the best business judgment of the merchant. This could be avoided if the question were handled in the proper way. Of course it requires considerable tact or diplomacy to handle these matters without offending the customer, but people who are most easily offended in this respect are usually the ones who least merit the credit that they ask.

Who Handles Your Credits?

In stores where it is impossible to hire a professional credit man it is not wise to leave this important work entirely to a bookkeeper, who may judge customers purely by their actual rating. Sometimes the customer who is actually worth the most money and possesses the most property is the slowest in meeting his obligations.

Character Counts for Much.

The honest farmer or mechanic who has only what he earns from day to day or from season to season can often be allowed credit to better advantage than the man who is far wealthier but less regular in making his payments. Therefore a rigid investigation of a man's personal reputation may result in the opening of desirable accounts that otherwise could not be obtained.

Limitations.

The customer's earning power should be carefully considered and he should never be permitted to run his account beyond the point where he can safely carry it upon his income. The moment he is allowed to increase his charges upon uncertain speculation there is danger for both parties concerned. The person with a limited income will often become discouraged and fail to pay a large account when a smaller account might have been met promptly.

Exact Systems.

The old plan of carrying all charge accounts in the ledgers, where they were seldom referred to or followed up, is not applicable to a modern business. While the ledger account is still useful it should be supplemented by a loose leaf or a card index system, which will make it possible to get the standing of every account at a glance. When a man has opened an account there should be a definite understanding as to the settlement—whether it should be settled monthly, bimonthly or at other intervals. This information, together with the customer's rating and notes concerning his income or reputation, should be entered upon his card or loose leaf. These cards or leaves should be kept alphabetically for reference, according to the customers' names. Another set of indexes should be kept on the same cards by the dates on which the accounts fall due. Thus there is no possibility of passing the date upon which the customer has agreed to settle. The sooner the retailer adopts a careful and adequate system in keeping track of his accounts the less he will have to charge to profit and loss at the end of the season.

HENRY DISSTON & SONS' CATALOGUE

HENRY DISSTON & SONS, Philadelphia, Pa., have issued a catalogue of more than 200 pages, showing their extensive line of manufactures. It is accompanied by a discount sheet, dated July 2, which is given in another column. Among the new goods which have been added since the last catalogue was issued are the following: Premier, Monarch, Royal and Regent Inserted Tooth Milling Saws, Miner's Crosscut Saws, Caribou and Beaver Crosscut Saws, Nevada Felling Crosscut Saw, Miner's One-Man Crosscut Saw, Birdsaw Anvils, Side Files for Band and Gang Saws, D-2 Saw Clamp and Filing Guide, Hand Hack Saws, Plumbers' Saws with adjustable handle, Cabinet Scrapers with ground edges, Climax Wood Saw Rod, No. 30 Butcher Saw with pressed steel handle, No. 1 Beef Splitting Saw, Hacksaw frames No. 125, 31 and 31½, Chromol Hack Saw Blades, Cementers' Corner, Circle and Edging Trowels, No. 20 and 21 Steel Squares with brazed and riveted stock, and Electricians' Screw Drivers.

Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

Opportunities, Village Versus City.

To the Editor: The question was asked me the other day as to whether a young lad had a better opportunity to start in a small village Hardware store than he would have by starting in a large city store of a general nature or what is commonly known as a department store. It seemed a simple question to answer at first thought, but the more I turned it over in my mind the more complicated it seemed to be getting, and finally I came to the conclusion that the boy starting in a small store had a better advantage in the long run. The suggestions which have come to my mind may be of interest to the Hardware trade in general.

COUNTRY LAD HAS THE ADVANTAGE.

I have found upon investigation that the lad who starts in a country Hardware store gets almost if not quite as large a salary as he would in a city Hardware store, and usually receives more than the lad beginning without any experience in a large department store. His future in either case depends very largely upon himself. Still, I think that of the three the country lad has the best opportunity to demonstrate his merits and advance himself. This not because the field is larger, for it is not. After the country lad has reached a certain point in his career it may even be found advisable for him to seek broader fields. In this thought I am dealing only with a beginner.

THE CITY BOY.

whether he be employed in a Hardware store or a department store is handicapped in many ways. First, he is likely to be confined to some single branch of the work, because the business is so large it is divided and sub-divided into departments and sub-departments. He may become thoroughly experienced in the department in which he is employed without gaining any great general idea of the business or being associated with any of the real heads of the enterprise.

The country lad in the small store has duties that are very much more general, sometimes extending from the sweeping out of the store in the morning to business correspondence and bookkeeping during the day. If he will take advantage of such opportunities as these he can lay a much broader foundation for a business career than can the city lad, who is confined to one department of a great store.

FIRM RELATIONS.

The city lad rarely comes in touch with the members of the firm that employs him, unless he is connected in some way with the offices, whereas the country lad is personally known to the firm, who also are likely to know his family and circumstances as well as his own personal traits. This is certainly a great advantage to the boy who is anxious to advance and who will apply himself diligently to accomplish that end.

In many large stores the department managers do not take any great personal interest in their subordinate help and care nothing about them beyond the service that they can get out of them. Of course there are exceptions, but they are the exceptions which prove the rule. They have been known to keep a boy back because they thought he took too much interest in the working of the department and showed signs of becoming strong in that particular branch. While there are undoubtedly instances of jealousy and narrow mindedness among the executive staff of a small store as well as the large stores, there are nevertheless fewer instances than will be found in the large stores.

SEEKING BROADER FIELDS.

It has been remarked to me that any young man, whether a beginner or an experienced worker, has a broader field while working for an old-line firm than while in the employ of a modern corporation. Still, there is always a time in the country boy's career when he must in justice to himself seek wider fields unless he is assured of substantial recognition by his home firm, but the fundamental experience which he has gained makes it possible for him to accomplish greater things in the broader field of operation, and it is often due to this preliminary training that the country young man outstrips his city competitors when he crosses swords with them in the business battle for success.

OBSERVER.

Weak-Kneed Manufacturers Work Mischief.

From an Eastern Manufacturer: It is about time that there was a little halt called on jobbers' demands upon manufacturers for payment for representation in their catalogues. Requests to subscribe to catalogues are becoming so frequent as to be almost unbearable, besides which the manufacturer is called upon to furnish the dealers with a full supply of special printed matter for their own distribution. But there are always certain manufacturers on specialty lines who are weak kneed, and through them the others are intimidated. Some jobbing houses are very bold in asking for what they want. We are trying to discourage the practice, but have not made very much headway.

Wire Fencing.

The position occupied in the trade by Woven Wire Fencing is illustrated in the recent saying of a well-known manufacturer, to the effect that about 80 per cent. of the Hardware merchants in the West make Woven Wire Fencing as standard stock as are Nails. In order to meet the requirements of the trade manufacturers are quite generally adding to their facilities for production and getting into a position to furnish their customers promptly.

W. J. Melton has purchased the store of William Rollman in Afton, I. T. He will carry a retail stock of Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting and Athletic Goods.

McCook Hardware Company has purchased the stock of W. T. Coleman in McCook, Neb. The company will conduct both a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints and Sporting Goods.

J. J. Stilson has purchased the business of the Atkinson Hardware Company, Atkinson, Neb. A retail business will be carried on in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Sporting Goods, Wagons and Buggies.

Pumps in the Hardware Trade.

THERE is an opportunity for the Hardware trade to do a much larger and more profitable business in Pumps than is the case at the present time. In most sections the Hardware store is the natural source of supply for this line, and the general run of merchants carry a small stock, at least of cheaper grades, which can be sold like a pail or a washtub when anybody calls for them. The opportunity referred to, however, does not lie in desultory business of this kind, and the line is one which will amply repay more active, intelligent and thorough attention.

By Securing the Agency

in his locality for a reputable and comprehensive line of Pumps, studying their features, advertising their merits, giving proper attention to installment, fittings, &c., and educating his customers to avoid cheap makeshifts and buy high grade Pumps adapted to the work required of them, a merchant cannot only establish a good volume of business in this line, but can make it pay as large a percentage of profit as any goods he carries.

Manufacturers Are Willing

and anxious to co-operate with the trade. Many of them, especially those who have entered the field within recent years, have found great difficulty in securing efficient representation with the consumer. Oftentimes they have been forced to resort to agents of unsatisfactory business caliber and would welcome an arrangement by which they could confine their output to the responsible Hardware merchants. Some manufacturers already have many retailers on their books who represent them exclusively in their locality. These arrangements are commonly satisfactory, as will be clear from the extracts from letters of large manufacturers given below. Indeed, the letters show that most manufacturers would be only too glad to increase the number of their Hardware representatives and will cheerfully accord them such protection as will preclude a competitor from coming in and sharing the profits of their introductory labors. A few concerns, however, notably those who have been identified with the Pump business for many years and whose product is widely and favorably known, regard it as better policy for them not to confine their line to one local merchant, believing that they may reasonably expect a share of the business of all.

Some Difficulties Are Encountered

by the Pump makers in connection with marketing their product through the Hardware trade. These considerations, however, are such that attention has only to be directed to them to demonstrate both the justice of the manufacturers' demands and the ease with which they may be met by the merchant with concomitant advantage to himself. The principal and, indeed, the fundamental difficulty arises from the retailer's tendency, deplored by all students of Hardware merchandising, to do all his business inside the store. Pumps are only one of a number of profitable lines which to be handled successfully require that the Hardwareman or his capable representative should get out from behind the counter and circulate among his customers. Other lines in this category include Implements, Farm Machinery, Wire and Iron Fencing, Paints, Sewing Machines, &c. The benefits of doing outside work on any one of these lines will accrue to the advantage of the other lines, as well as benefit the merchant's general trade. Only by keeping in touch with present or prospective customers can the merchant keep posted as to their immediate or future requirements and become a successful bidder for the more considerable orders to be placed in the local market. In this connection a prominent manufacturer in Indiana writes:

The difficulty is that Hardware merchants do not, as a class, push the Pump trade at all; simply care for the trade as it comes to them. Many of them say they cannot push the trade in competition with the well drillers and Pump tinkers, who are to be found everywhere and who charge whatever they can get. They demoralize prices, so the legitimate dealers claim, and make the trade unprofitable. We could name to you a number of striking examples where the Hardware dealers did overcome this trade and practically killed it by a persistent working of the Pump trade year after year with a standard high grade class of goods. They sell the cheap set lengths if a customer insists on wanting them, but they recommend and push a stronger, more reliable class of Pumps. They also try to suit the Pump to the purpose and not the purpose to the Pump. Intelligent Pump work will win, the same as intelligent work in anything else. In a number of instances where the dealers desired the exclusive sale of our Pumps and would handle our line exclusively, we have given them territory. It always paid both parties. It always will pay and we would be pleased to make more such arrangements. If every Hardware merchant would select a good line and would stay by it year in and year out, he can assure himself of always getting the right price and the best grade of goods, because he is worth taking care of. He can then carry a small line of repairs for his Pumps and always be ready to please a customer by having just what he wants when he needs it most urgently. New trade will come to him from this one reason alone.

Merchants Must Push

Paid Both Parties

The willingness of manufacturers to protect the retailer is indicated by the following paragraph from a letter from a company in the Central West:

We are heartily in accord with the idea of Hardwaremen handling Pumps on the agency basis. It is our policy to protect the merchant in the sale of our Pumps in his territory. When we sell a jobber we outline his territory that he may use the same policy toward the retail trade as above mentioned. This is an incentive for the local dealer to push the line, as he then has something to put up his talk on to sell the goods, whereas if the purchaser can go down the street to a competitor and get the same identical line the transaction resolves itself simply into a matter of price.

Territory Outlined

Attention to Installation.

Closely allied with the necessity of the merchants going outside the store to work up the Pump business is the importance of giving proper attention to installation. Such attention, of course, is especially necessary on high grade Pumps which are to be fitted to deep wells. Manufacturers strongly insist on this service to insure their goods giving satisfaction to purchasers, and the demand is only just in consideration of the privileges secured to retailers under the agency arrangement. An Iowa manufacturer writes:

The greatest difficulty we find is that a Hardware merchant is not willing to send a man out to install a Pump after making a sale. It generally takes quite an amount of time and more or less experience to fit up a Pump and place it in a well so it will give good results. Many of them dislike to bother with it on that account, and prefer to sell such Pumps as are used only for shallow wells, where the average man can install it for himself. Fitting a Pump to a deep well is a more difficult proposition. As a rule the manufacturer sells but one dealer in a place and recognizes him as his agent, referring all inquiries to him with a view of increasing the output without cutting margins.

Requires Experience

FROM A MANUFACTURER IN WISCONSIN: All manufacturers, through their salesmen, endeavor to stimulate the trade and induce Hardwaremen to push sales, but in a general way this trade by Hardwaremen is limited to a rather small number of styles, such as Pitcher Spout Cistern Pumps and one or two styles of set lengths, because most of the styles of Pumps for deeper wells require some special fitting of pipes, and sometimes some little technical knowledge and skill, to get satisfactory results, so that the Pump trade quite largely goes to men who make a specialty of it, and these men frequently

combine well making and the Wind Mill trade with Pump work. But even then in average localities the business cannot often be made large and hence is frequently left to an inferior grade of business men. If it were possible for Hardwaremen to be induced to push this line the manufacturers would often have better men to deal with, but the sticking point is, Can they be brought to take up this line, which involves considerable outside work and a getting away from their habit of doing their business inside the store, or at least compels the keeping of a man who can and will go out and do such work?

Hardwaremen Better Men

Mistake of Catering to Cheap Trade

Many manufacturers express regret that the general market has been flooded with so many cheap Pumps on which the margin of profit is very small. Indeed, the statement is made that the better class of merchants have been deterred in following up the Pump business because of their unwillingness to handle or compete with goods of this character, which, as they certainly will give dissatisfaction to the users, can hardly fail to hurt the reputation of the sellers. In this connection manufacturers emphasize the advantages of deep wells, free from surface impurities, asserting that the merchant who proclaims and demonstrates a gospel of

Pure Water and Lots of It

will earn the gratitude of the community, besides securing substantial profits. This idea is expressed by a large manufacturer as follows:

A good Pump is a benefactor and the dealer who supplies it accomplishes something that will bring him trade. Good, pure water does more for the human race than any other element besides air. We cannot see why the marketing of iron Pumps on the part of the Hardware dealer should not be encouraged to the extent of drawing their attention to the importance and to the profit, since the demand does not depend on crops or on seasons, as is the case with substantially all other implements. Pumps are sold every day in the year and used from morning until night.

All the Year Round

Unfortunately a great many manufacturers indulge in efforts for the cheapest that can be produced to satisfy certain buyers who figure on price regardless of quality, which is a great mistake and has undoubtedly influenced a great many dealers to abandon efforts for the distribution of iron pumps. There is no sense in putting in a cheap Lift or Pitcher Pump on which there is no margin to the manufacturer or dealer and expect the same, as it must be constructed to meet present price, to give satisfaction in a cistern or well that may have cost from $50 to $100. The consumer is abundantly able to pay for the best and has a right to expect the same from the dealer, who in turn should recommend it, and who has made a mistake, in our opinion, by handling old, antiquated, poorly constructed Pumps simply because they are cheap.

Recommend the Best

Another manufacturer writes:

We believe one of the reasons why Hardware dealers have not devoted more attention to the Pump trade is because the market has been flooded with cheap Pumps which have been bought and sold on close margin without much profit or satisfaction to those who handle or use them. We have never attempted to go after this cheap class of trade, but have built up our very satisfactory business by making the best Pump we know how to build for each class of work. Our prices to the trade are low for the class of Pumps which we are supplying, but we have never undertaken to sell these goods below a reasonable margin of profit for the purpose of meeting competition. Our Pumps are sold through the local Pump, Implement and Hardware dealers, and we do not make an effort to secure more than one customer in a town.

Foregoes Cheap Trade

FROM A COMPANY IN THE WEST: There is a good opportunity for the Hardware merchant to make a specialty of Pumps, Cylinders, &c. The addition of a good line of Pumps, especially the better grades, such as Double Acting Pumps and Cylinders, when properly handled, will produce a better margin of profit on the investment than a line of Implements. Pump manufacturers as a rule depend upon the retail merchant for their trade; many of them also sell jobbers within certain territory. The stronger the reputation of the manufacturer and his products the more particular they should be (and they generally are) in giving the exclusive agency to only one dealer in a town. We ourselves are very strict in regard to exclusive agencies.

Depend on the Merchant

Many Hardware dealers, as well as those in other lines, complain of there being no profit in Pumps. This is true when they cater to cheap competition goods. Those who make a specialty of Pumps and push the better grades are as a rule well satisfied. Some medium grade goods will always be needed, but they should not predominate, as the case is at the present time. It is a mistake to think that the consumer wants a cheap Pump or Cylinder, as Pump troubles, which naturally follow the sale of cheap goods, are not easy to overcome, but many times the consumer buys the cheapest outfit because the dealer has not taken the trouble to sell him anything better, nor to "show him" why the best Pump and Cylinder is always the cheapest in the end. We will spend a good deal of time and money this year in encouraging the dealer as well as the consumer to buy and use good Pumps, especially double acting force Pumps and high grade Cylinders, because it's the latter that does the business. As we educate the dealer we expect him to assist us in educating the consumer, and the trade papers can render much assistance along these lines.

Need of Education

Profit in Allied Lines

The value of a Pump business is augmented by the fact that it carries with it a very considerable trade in Pipe, Valves, Fittings, &c., which would not otherwise be enjoyed. These lines are exceedingly profitable and their importance should not be lost sight of. A large Eastern manufacturer makes the statement that Pipe and Fittings, exclusive of the labor of installation, often amount to more than the Pump itself. The matter is also referred to by another manufacturer, who writes as follows:

We have often made note of the fact that a great many stores do not give the attention to the Iron Pump business that they should, claiming that a line of Iron Pumps consumes a great deal of time and work and that the profits derived from the same were small. We believe only such complaints are made by Hardware supply stores who have not kept close track on the Iron Pump business, as the writer was recently in a large Hardware store that handles a great many Iron Pumps and makes a specialty of them, and he was told by their manager that their line of Iron Pumps netted them more profit year in and year out than any other article they handled. Iron Pumps carry with them a great deal of other business, as there is seldom a Pump sold that does not carry with it a great deal of pipe, some valves and other material, and on the whole it makes a very nice sale. Every store that handles Pumps to any extent must be in position to set them up and have pipe cutting devices as well as a man who thoroughly understands the lifting and forcing of water. If these little details are taken into consideration and the very best Pumps are used, we believe that every dealer will find that there is no more satisfactory article to handle than an Iron Pump. It is one article for which a good round price can be obtained, provided a dealer has a reputation for putting in a Pump that pumps.

Carries Other Sales

Hardwaremen Have Exceptional Facilities.

As already suggested in this article, the Hardware store seems to be the natural place to buy a Pump in the average community. This is especially the case where the Hardwareman is the plumber as well, as indeed he often is. Such merchants are not only in a position to supply all necessary accessories for a Pump, but have shops where work connected with installation, as well as repairs, can be most conveniently attended to. As a rule, they also employ men who understand the technical problems of lifting and forcing water, thus insuring satisfactory service to the consumer.

Diverting Business from Catalogue Houses.

There is reason to believe that a large and increasing Pump business is being done by the large mail order houses. That some manufacturers are alive to the problems of the retailer and fully in sympathy with his cause is proved in the conclusion of the following letter from a

large Pump manufacturer in the Middle West, who shows how the merchant can deal his catalogue house enemy a telling blow:

Hardwaremen Losing Business

We think that the Hardware people as a rule have been losing considerable business by not paying more attention to the Pump business. There are a great many people who handle Pumps and material used in connection with same almost exclusively, and they have worked up a nice trade. One of the troubles of the Hardware business so far as the Pump line is concerned is that they have been catering principally to the trade requiring a cheap Pitcher Pump. This is a style of Pump that there is no profit on for the manufacturer or the Hardware dealer to speak of, and it is too cheap a Pump for any one to use. The Hardware merchant will find, if he will give the Pump business a portion of his attention, that it will be the means of increasing his sales on a great many articles that at the present time he is only selling in a very limited way. For instance, it will increase his sales of Hose and Hose Trimmings, Valves and Fittings, and many other items.

Profit in Better Grades

If the Hardware merchant would handle a better grade of Pumps than the common Pitcher Pumps he would find that it would afford him a better profit, and be more satisfactory to his customers. There are certain places where the cheap Pitcher Pumps seem to answer the purpose fairly well, but in nearly all cases a better Pump could be used with more satisfactory results to all parties concerned. It would be a good thing for everybody if the Pitcher Pump was discarded entirely and a more substantial Pump used in its place. We appoint agents among the retail dealers in certain localities where they push the sale of our line of goods energetically, and we are willing to afford them all the assistance that we can consistently in the way of supplying printed matter, and furnishing any detailed information they may require in this connection. If the Hardware trade would take more interest in a general line of Pumps it would divert a great deal of the business from the catalogue houses.

Catalogue Houses

We are informed that the Pump sales of the catalogue houses are growing very rapidly, and it is therefore a matter that should interest all of the Hardware merchants.

TREFOIL CLUB.

THE TREFOIL CLUB is the name of a social organization originally formed about 18 years ago by some of the higher officials of the Yale & Towne Mfg. Company, but which lapsed after a while, to be again reestablished five years ago, since which time it has been the custom to have two meetings annually, one in New York in the winter and one at the seashore in the summer. The object of the club is to bring the officers and managers of headquarters in New York and the works at Stamford, Conn., together and thus learn under congenial conditions to know each other better socially, business on both occasions being barred. The meeting last winter included a theatre party and a dinner afterward. The last gathering, on June 30, was at Rye Beach, N. Y., which partook more of the nature of an outing, there being a baseball game, athletic events with suitable prizes, followed by a dinner and speeches. The club is regularly organized with officers, constitution, by-laws, &c.

The business of C. A. Heegaard, Mandan, N. D., has been incorporated as the C. A. Heegaard Hardware Company, the capital stock being $20,000. The incorporators are Christian A. Heegaard, Walter Schreiber and S. E. Heegaard.

The business formerly conducted by Adolph Ulmer, 7 Temple street, Portland, Maine, dealer in Cutlery, has been incorporated under Maine laws with a capital stock of $10,000. The officers are president, Charles F. Ulmer, and treasurer, Louise M. Ulmer.

Whiteford-Townsend Hardware Company, Savannah, Mo., has been incorporated, with a capital of $10,000, to conduct a retail business in Shelf and Heavy Hardware, Stoves, Tinware, Sporting Goods, Harness, Furnaces, Pumps and Gasoline Engines.

THE BOGGS-HOWLAND COMPANY.

THE BOGGS-HOWLAND COMPANY, 23 Warren street, New York, a selling organization established within the year, has recently acquired the representation of the following houses: Sales agent for Eastern territory of the T. C. Prouty Company, Albion, Mich., Sliding Door Hangers; Black Silk Stove Polish Works, Sterling, Ill., Stove Polish; Liveright Bros., Philadelphia, Pa., successors to Mayer & Co., manufacturers of Gold Medal Files, sales agent for New York City and export; Globe Lawn Mower Mfg. Company, Reading Pa., sales agent for Eastern territory; Mount Carmel Belt Company, Mount Carmel, Conn., Sleigh Shoe, Stove and Sink Bolts, Stove Rods, Nuts, Rivets, Washers and Machine Screws, sales agent for New York City; National Cutlery Company, Detroit, Mich., Butcher Knives, Axes, Hatchets, Scythes and Cold Chisels, sales agent for Eastern territory.

REQUESTS FOR CATALOGUES, &c.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM LUCHSINGER MERCANTILE COMPANY, Appleton, Mo., successor to Adam Luchsinger, who died May 29. The company carries a stock of Shelf and Heavy Hardware, Stoves, Tinware and Agricultural Implements, at wholesale and retail.

FROM DICKSON-PATTON HARDWARE COMPANY, Ambridge, Pa., which has been incorporated with a capital stock of $10,000. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting and Athletic Goods at wholesale and retail.

FROM WALKER HARDWARE COMPANY, Berryville, Ark., incorporated with a capital stock of $20,000. The company succeeds G. W. Walker & Son. The line carried includes Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods, Wagons, Vehicles, Sash, Doors and Leather Goods.

FROM THORNTON & GROOM, who succeed Thornton Bros. in Clarksville, Mo., in the retail Shelf and Heavy Hardware, Stove, Tinware, Agricultural Implement, Paint, Oil and Sporting Goods business.

AMONG THE HARDWARE TRADE.

W. T. Matters, Neosho, Mo., has added a stock of shelf and heavy Hardware, Stoves, Tinware, Sporting and Athletic Goods to his former Harness and Buggy business. George Sansberry, recently with the Joplin Hardware Company, will have charge of the Hardware department.

Carstens Brothers have succeeded to the business of J. F. Carstens & Son, in Ackley, Ia. A retail stock of Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, and Sporting Goods will be carried.

Moore-Ryan Furniture & Undertaking Company has bought the retail business of Herbert J. Moore, Claremore, I. T., comprising Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods, &c.

Edward J. Drake, secretary and treasurer of the T. A. Baynon Company, 97-99 Reade street, New York, will sail on the Lorraine, July 5, for a six weeks' pleasure trip in Europe.

CHURCHILL HARDWARE COMPANY'S STORE.

A HANDSOME and well arranged Hardware store is that of Churchill Hardware Company, Galesburg, Ill. The main floor, one side of which is shown in Fig. 1, is 140 feet long and 30 feet wide. The company also occupies the second floor over this and two adjoining stores, and has a two-story storehouse, 25 x 40 feet. Another two-story brick building is in process of erection, which will be 50 x 66 feet. The second floor of this building will be used for a tin shop, while the first floor will be of cement and furnished with all necessary equipment for a garage. The company handled Automobiles last year, and will go into the line much stronger this year, finding it very profitable to handle in connection with its Hardware business.

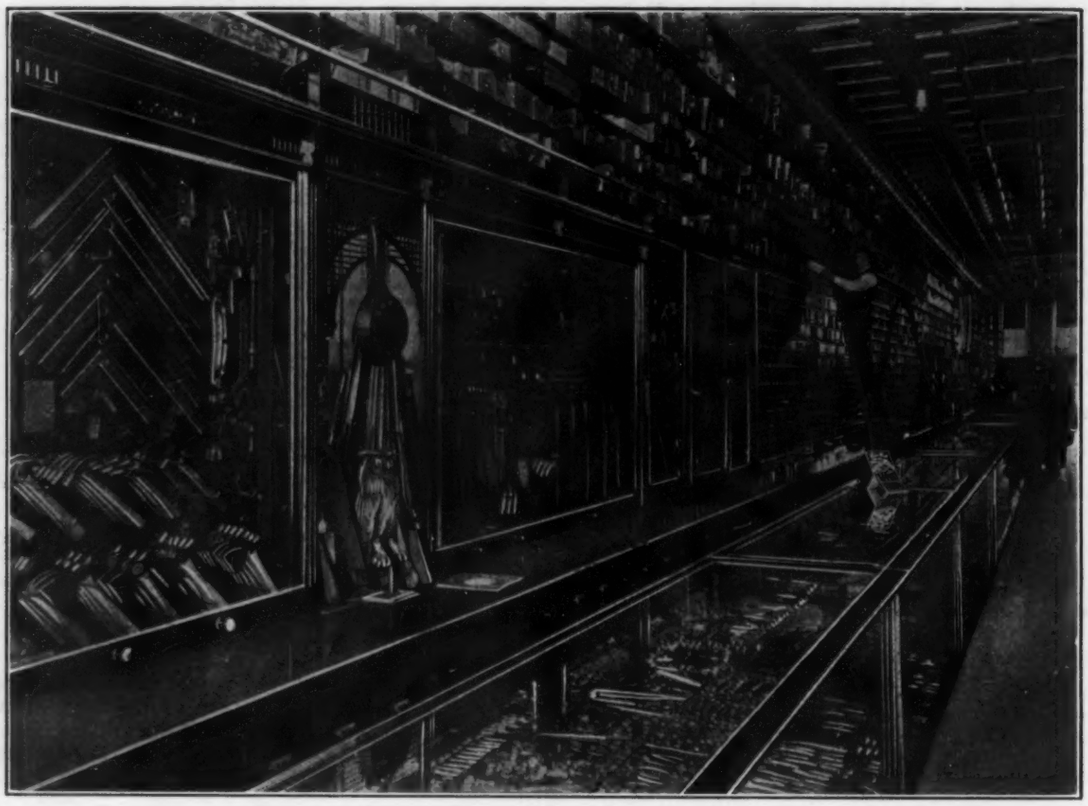


Fig. 1.—Churchill Hardware Company's Store Showing Wall Cases, Showcases and Shelving.

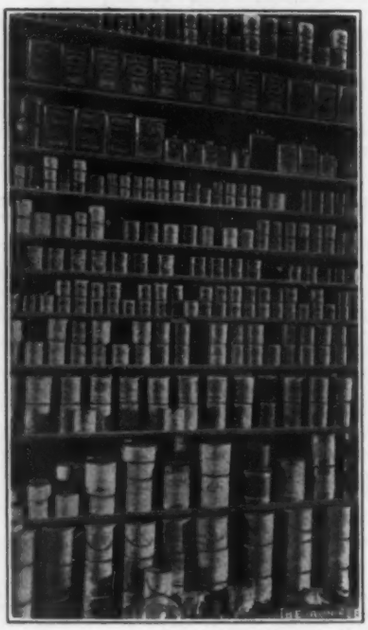


Fig. 2.—Churchill Hardware Company's Store, Paint Section.

The Paint Section.

of the store, a portion of which is shown in Fig. 2, occupies a space 30 feet long and 16½ feet high, running from floor to ceiling. This contains all the ready Mixed Paints carried in stock, including gallon, ½-gallon, quart, pint and ½-pint cans of all kinds. There are 30 different varieties of household colors. Varnishes, Wood Stains, Inside Household Paints, Carriage Paints and Enamels are also carried. In the basement space is devoted to 28 different varieties of Cold Water Colors, Putty, Dry Colors, White Lead, &c. Turpentine and Raw and Boiled Linseed Oil are kept in the cellar and drawn from self measuring pumps on the first floor. The company states that there is no one department of its business that is more easily handled or brings more trade and better returns than the Paint department. A steady demand is enjoyed by the company, which states that its experience has been that Painters would much rather trade in a Hardware store than elsewhere.

The Churchill Company's business is characterized by much energy and enterprise, and a steady increase is noted from year to year. A good deal of attention is given to methods for securing publicity, and the company's window displays are frequently the subject of favorable comment by the public.

L. G. KREISLE has succeeded Pridham & Kreisle in Victoria, Texas, in the wholesale and retail Hardware and Vehicle business. The old firm of Pridham & Kreisle of Port Lavaca, Texas, remains unchanged.

CRUMBAKER & WILSON succeed R. C. Wilson in Garfield, Wash. The firm do a retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods, &c.

LAURITSON BROS. have succeeded Broom & Lauritson in Loomis, Neb. The retail line carried includes Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Harness and Saddlery.

HOUSE FURNISHING GOODS EXHIBITION.

HOUSE Furnishing Goods Exhibition, the first of its kind, will be held in the Madison Square Garden, New York, during the week of August 5 to 11, inclusive. It will be under the auspices of the House Furnishing Goods Exhibition Company, headquarters at 59-61 Park place, New York. The price of admission will be 50 cents, but it is the intention of the company, with a view to getting out a large attendance and popularizing the exhibition with those who are interested in House Furnishing Goods, to distribute many thousands of admission tickets gratis through the medium of retailers and wholesalers both in New York and other cities. The exhibition space, we are advised, is practically all engaged, and manufacturers will use it not only to exhibit the goods they make, but in many instances will have practical demonstrations going on for the instruction not only of buyers of business houses but the individual housekeeper and others interested in labor saving household devices. The Exhibition Company states that from correspondence they have had a large attendance of buyers is assured. Aside from the orchestral concerts afternoon and evening, other features of an interesting and popular character will be provided for the diversion and amusement of the general public.

MISCELLANEOUS NOTES.

Baby Featherweight Repeating Rifle Model No. 18.

The Marlin Firearms Company, New Haven, Conn., is now fitting its .22 caliber model No. 18 repeating rifle with swivels and sling strap. An illustrated description of this rifle was given in the January 11, 1906, issue of *The Iron Age*.

The Dover Mfg. Company.

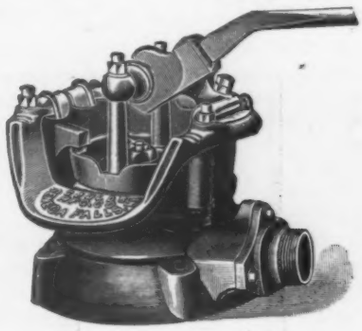
A recent catalogue of the Dover Mfg. Company, Canal Dover, Ohio, shows two additions to its line of asbestos sad irons. These are polishing iron No. 30 and a French set, No. 66. A feature of the catalogue which appeals particularly to exporters is the arrangement by which all necessary information is given in connection with the illustration of each item.

Charles Parker Company.

The Charles Parker Company, Meriden, Conn., and 32 Warren street, New York, has just bought out a fine new line of lamps for burning kerosene oil, together with a good assortment of designs in portables for use in connection with both gas and electricity. All of the various designs are made in a number of attractive finishes, which include clouded and old brass, terra cotta, verde, &c. The oil lamps have central draft burners.

Goulds New Diaphragm Suction Pump.

The accompanying cut illustrates a new diaphragm suction pump, intended for use on vessels, barges, dredges, wharves, &c., recently placed on the market by the Goulds Mfg. Company, Seneca Falls, N. Y. The pump is alluded to as combining simplicity with strength. The diaphragm takes the place of the plunger to make the pump particularly well adapted for pumping water containing mud, gravel, sand, sewage, coal, chips or any semi-fluid matter. The illustration shows the side suction for hose. The lever is reversible and can be used at the back of the pump or on either side. The lower valve is of metal, rubber faced, easy of access and readily removable. The water ways are large and the diaphragm is made of the best quality of rubber. The company also makes a pump with bottom suction, which is similar in general construction to the one illustrated, differing only in the suction, having a different kind of suction valve. These pumps are built with a suction from 2½ to 4 in. hose or iron pipe, and with an approximate capacity of 1800 to

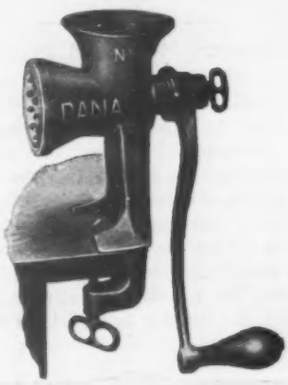


Goulds New Diaphragm Suction Pump.

6000 gallons per hour. Special brass hose couplings, suction hose and strainers are furnished, when ordered.

The Dana Food Chopper.

The Dana Mfg. Company, Cincinnati, Ohio, is offering the food chopper shown in the accompanying cut. It has only two parts to clean, the rotor and shell, and has a large cutting capacity. The cutters are at an oblique angle and are alluded to as self-sharpening. Three rotors are supplied with each machine, one for each kind of work, including chopping or pulverizing any food used in the kitchen. Each rotor has a conducting spiral of its own, all in one piece, so as to feed food properly for the article chopped, making, it is explained, the pieces uni-



The Dana Food Chopper.

form, mashing being impossible, retaining the juices and doing the work easily and rapidly. The three rotors are designed to chop to whatever size desired meat of all kinds, raw or cooked; fruits and vegetables of all kinds and coffee. Rotor No. 63 grinds coffee and pulverizes it, if desired. When the rotor is removed the shell is open and free for cleaning, with no uncut food left in the machine and no drip or waste.

Butcher Automatic Post Hole Digger.

Laramy Howlett Company, Cambridge, Mass., James L. Neegus, 103 Reade street, New York, agent for export and New York and vicinity, manufactures the patented Butcher automatic post hole digger, illustrated herewith. The structural features make it peculiarly adaptable for digging all kinds of holes in earth, especially deep, narrow holes for fence posts, telegraph and railroad work, holes for masons when building brick piers and innumerable ground openings more or less awkward and difficult to dig. A unique characteristic of this form of digger is that it will take up a shovelful of earth by merely rocking the handle forward and back from the bottom of

a hole, over 5 ft. deep and less than a foot in diameter, if desired. The length over all, including a 1½-in. ash handle, is 6 ft. 10 in. The steel scoop, japan finish, of 1-16-in. metal, is 9 x 7 x 3 in, and steel rods, which by a

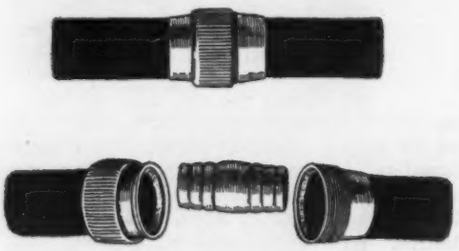
Fig. 1.—Butcher Automatic Post Hole Digger.

Fig. 2.—Scoop at Right Angle to Lift Out Dirt.

simple, protected, double ratchet device manipulate the scoop, are 5-16 in. in diameter. The socket is of malleable iron and all metal parts are japanned. The digger can be used in ordinary soil, sand, loam or light gravel and in hard ground by first loosening it with a bar.

The Universal Hose and Pipe Coupler.

The Universal Coupler Company, 955 Martin street, Cincinnati, Ohio, is offering the hose and pipe coupler shown in the accompanying cuts. The upper illustration shows the coupling completed and the other the ends of the pipe before coupling has been effected. The particular feature of the coupler is a double tapering piece which helps to bridge the gap from pipe end to pipe end, but which is mainly important in arranging for tightness of joint without the necessity of any clamps or washers. In this respect the coupler is especially valuable in that



Universal Hose and Lead Pipe Coupler.

it can be readily employed where there is a break in lead pipe or in a hose, it being necessary only to put the two main parts of the coupler on opposite ends of the broken or burst pipe and to bring the ends together over the bridging piece. The two main parts of the coupler are, in fact, a union, the swiveling nut of one end screwing over the threads of the other, with the bridging piece forced into the abutting ends of the pipe joint, the bridging piece compressing the ends of the pipe against the main parts of the union to effect tightness of joint. No tools are required in using the coupler, and the point is made that it will prove a valuable article when a burst lead pipe, for example, may be repaired without shutting off the source of supply for a long time and without incurring the expense of usual methods of making such joints.

The Edwards Perfect Hip Shingles.

The Edwards Mfg. Company, Cincinnati, Ohio, is offering the hip shingles shown in Fig. 1. They are made for hips of roofs and to take the place of plain tin strips,

Fig. 1.—The Edwards Perfect Hip Shingle.

wood or metal rolls. The shingles are 4 x 9 in., made of tin, galvanized iron and copper. In Fig. 2 the hip shingles are shown in combination with the Edwards metal

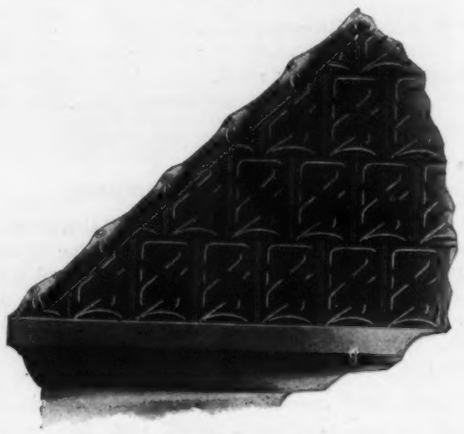


Fig. 2.—Perfect Hip Shingles in Combination with Edwards Metal Shingles.

shingles. The latter are made in three sizes, 7 x 10, 10 x 14, 14 x 20 in., of pure sheet copper, tin plate, painted or galvanized.

Hexagon Cap Screw Wrenches.

J. H. Williams & Co., 150 Hamilton avenue and Richards street, Brooklyn, N. Y., are offering a new line of extra weight hexagon cap screw wrenches, 15-degree angle, single and double head, the latter of which is

Hexagon Cap Screw Wrenches.

shown in the accompanying cut. The wrenches are furnished in three stages of finish, as follows: Milled only; milled, case hardened all over, with heads ground bright; milled, polished all over, case hardened and lacquered, with heads bright. The wrench illustrated is made in 25 numbers, to take screws from ⅛ to 1¼ in. diameter. Wrenches for square cap screws, having the same angle, single and double head, are also made.

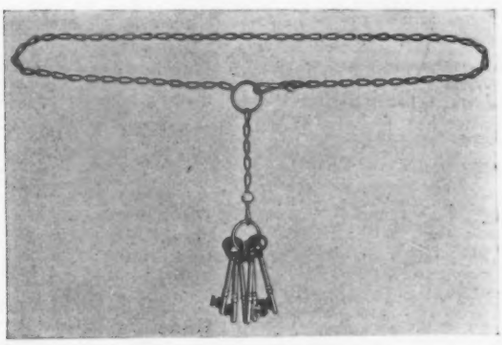
Red Jacket Hydro-Pneumatic Double Acting Force Pump Fig. 147.

Red Jacket Mfg. Company, Davenport, Iowa, is putting on the market the hydro-pneumatic double acting force pump shown herewith. The company recommends this special pump for use in connection with pressure tank systems. Attached to the cylinder head is a separate air pump. It is made entirely of brass, with leather plunger and rubber faced air valves. The air pump is operated in connection with the lever in pumping water. A column of water can be forced through a vertical pipe to a hight of about 27 in., it is stated, for every pound of pressure; thus a pressure of 60 pounds as shown by the pressure gauge will elevate the water 135 ft. above the tank. The company states that by using a 30 x 72 in. pressure tank, pumping it about two-thirds full of water and closing the air cock on the tank and cutting off the water supply, air can be pumped to a pressure of 80 pounds. The pump is alluded to as being strong and compact and occupies a floor space of 8 x 24 in. The pump gives a full capacity at each stroke of the handle. The lever is long and, working horizontally as it does, makes an easy working and powerful pump. It is supplied with a 3-in. brass lined cylinder, brass piston rod and brass valve seats. The valves can be easily exposed to view by unscrewing caps on the top of the pump. There are two sets of suction and discharge openings, one on each side. The pump can be purchased without the air compression attachment for forcing water into an elevated tank, &c.

Red Jacket Hydro-Pneumatic Double Acting Force Pump Fig. 147.

Housekeepers' Chatelaine Key Chain.

The Greystone Mfg. Company, Greystone, Conn., is offering the chatelaine key chain shown in the accompanying cut. The chain is designed for the use of housekeepers and fastens about the waist, permitting all the house keys to be suspended from the ring at the end of the short chain. This obviates carrying keys in the hand, and at the same time they are always at hand for instant use.



Housekeepers' Chatelaine Key Chain.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal.
Linseed, City, raw	39 @40
City, Boiled	40 @41
State and Western, raw	37 @38
Raw Calcutta Seed	68 @..
Lard, Extra Prime, Winter	69 @71
Extra No. 1	52 @55
No. 1	41 @43
Cotton-seed, Crude, f.o.b. mills	@..
Summer Yellow, Prime	37 @..
Summer Yellow, off grades	@..
Sperm, Crude	55 @..
Natural Spring	@..
Bleached Spring	@..
Natural Winter	63 @65
Bleached Winter	66 @67
Bleached Winter, Extra	68 @69
Tallow, Prime	51 @53
Whale, Crude	32 @33
Natural Winter	33 @34
Bleached Winter	45 @46
Extra Bleached Winter	47 @48
Menhaden, Brown, Strained	26 @29
Light, Strained	27 @30
Bleached, Winter	@..
Extra Bleached, Winter	@..
Southern	@..
Cocoanut, Ceylon	℔ lb 7 @ 7¼
Cochin	℔ lb 8 @ 8¼
Cod, Domestic, Prime	30 @33
Newfoundland	35 @37
Red, Elaine	37 @40
Red, Saponified	℔ lb 4¾@ 5
Olive, Italian, bbls	57 @60
Neatsfoot, Prime	43 @49
Palm, Logoa	℔ lb 6 @ 6½

Mineral Oils—

	℔ gal.
Black, 29 gravity, 25@30 cold test	10½@11½
29 gravity, 15 cold test	11½@12½
Summer	10½@11½
Cylinder, light filtered	18 @19
Dark filtered	16 @17
Paraffine, 903-907 gravity	13½@14
903 gravity	12½@13
883 gravity	10¾@10¾
Red	12½@14
In small lots ½¢ advance.	

Miscellaneous—

Barytes:		
White, Foreign	℔ ton	$17.50@19.00
Amer. floated	℔ ton	19.00@.....
Off color, No. 2	℔ ton	13.50@15.00
Chalk, in bulk	℔ ton	3.00@ 3.25
In bbls	℔ 100 lb	....@ .35
China Clay, English	℔ ton	11.00@17.00
Cobalt, Oxide	℔ 100 lb	2.50@ 2.60
Whiting, Common	℔ 100 lb	.43@ .48
Gilders	℔ 100 lb	.50@ .55
Ex. Gilders	℔ 100 lb	.55@ .60

Putty, Commercial—℔ 100 lb

In bladders	$1.70 @1.85
In bbls. or tubs	1.20 @1.40
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—℔ gal.

In Oil bbls	60 @60½
In machine bbls	60½@61

Glue—

	℔ lb
Cabinet	11 @15
Common Bone	7 @ 9
Extra White	18 @24
Foot Stock, White	11 @14
Foot Stock, Brown	8 @11
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	9 @12
Medium White	14 @17

Gum Shellac—

	℔ lb
Bleached Commercial	43 @44
Bone Dried	53 @64
Button	40 @60
Diamond I	54 @55
Fine Orange	50 @52
A. C. Garnet	44 @44½
D. C	58 @60
Octagon B	@52
T. N	47 @48
V. S. O	@55

Colors in Oil—

	℔ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	12 @16
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White Lead, Zinc, &c.—

	℔ lb
Lead, English white, in Oil	9½@ 9¾
Lead, American white, in Oil:	
Lots of 500 lb or over	@ 7¼
Lots less than 500 lb	@ 7¾
In Barrels	@ 6¾
Lead, White, in oil, 25 lb tin pails, add to keg price	@ ⅛
Lead, White, in oil, 12½ lb tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 lb asst'ed tins, add to keg price	@ 1½

Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.

	℔ lb
Lead, White, Dry, in bbls	@ 6¾
Zinc, American, dry	5¾@ 5½
Zinc, French:	
Antwerp, Red Seal, dry	8¾
Antwerp, Green Seal, dry	10¼
Paris, Red Seal, dry	9¾
Paris, Green Seal, dry	10½
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	12¾@13½
Lots of less than 1 ton	12¾@13¾
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	11¾@11¾
Lots of less than 1 ton	11¾@12¼

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	℔ lb
Black, Carbon	5 @10
Black Drop, American	4 @ 6
Black Drop, English	5 @15
Black, Ivory	16 @20
Lamp, Com	4½@ 6
Blue, Celestial	4 @ 6
Blue, Chinese	29 @32
Blue, Prussian	27 @30
Blue, Ultramarine	4½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.10@3.20
Green, Chrome, ordinary	3½@ 6
Green, Chrome, pure	17 @25
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 lb or over	@ 7¼
Lots less than 500 lb	@ 7¾
Litharge, American, bbls	@ 7¼
Ocher, American	℔ ton $8.50@16.00
American Golden	2½@ 3½
French	1¼@ 2½
Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
French	10¾@12
German	8½@10
American	8½@ 8¾
Red, Indian, English	4½@ 8½
American	3 @ 3¼
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	℔ 100 lb $0.50@1.25
English	100 lb $1.15@1.75
Sienna, Italian, Burnt and Powdered	3 @ 9½
Italian, Raw, Powdered	3 @ 6½
American, Raw	1½@ 2
American Burnt and Pow	1½@ 2
Tale, French	℔ ton $17.00@25.00
American	℔ ton 17.00@25.00
Terra Alba, French	℔ 100 lb 90 @1.00
English	℔ 100 lb 80 @1.00
American	℔ 100 lb, No. 1, 75 @80
American	℔ 100 lb, No. 2, 60 @65
Umber, T'key, Bnt. & Pow	2½@ 3½
Turkey, Raw and Powdered	2½@ 3½
Burnt, American	1½@ 2
Raw, American	1½@ 2
Yellow Chrome	12 @14
Vermilion, American Lead	10 @25
Quicksilver, bulk	65 @..
Quicksilver, bags	@66
English, Import	65 @70
Chinese	$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ₩ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition— See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils.....₩ lb 6¾@7 ¢
Hay-Budden, Wrought.....9@9¼ ¢
Horseshoe brand, Wrought.....9@9¼ ¢
Trenton .....₩ lb 9@9¼ ¢

Imported—
Peter Wright & Sons.....₩ lb 10¼ ¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....15&10%

Apple Parers— See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co.....33⅓%

Augers and Bits—
Com. Double Spur.....75@75&5%
Jennings' Pats., reg. finish.....50&10@60%
Black Lip or Blued.....60&10%
Boring Mach. Augers.....70&10%
Car Bits, 12-in. twist.....50&10%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50&5&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist....60&10%
Wright's Jennings' Bits.....50%

Bit Stock Drills— See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ₩ doz. $36; No. 2, $48.....65%
Ford's, Clark's Pattern.....60&5%
C. E. Jennings & Co., Steer's Pat..25%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames .....25&10%
Universal 20%
Wood's Universal.....25%

Ship Augers and Bits—
Ship Augers.....45&5@—%
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....35&5%
Ohio Tool Co.'s.....40%
Snell's 40%

Awl Hafts— See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66 ¢
Unhandled, Patent..gro.66@70 ¢
Peg Awls:
Unhandled, Patent..gro. 31@34 ¢
Unhdled, Shldered..gro. 65@70 ¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00
Hurwood 40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights:
First Quality.....$4.75@5.00
Second Quality.....$4.25@4.50
Double Bit, base weights:
First Quality.....$7.00@7.50
Second Quality.....$6.50@6.75

Axle Grease— See *Grease, Axle*

Axles— *Iron or Steel*
Concord, Loose Collar...4¼@4¾ ¢
Concord, Solid Collar...4¾@5¼ ¢
No. 1 Common, Loose...3¾@4¾ ¢
No. 1½ Com., New Style3¾@4¼ ¢
No. 2 Solid Collar.....4@4½ ¢
Half Patent:
Nos. 7, 8, 11 and 12....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18...75&10@75&10&5%
Nos. 19 to 22...75&10@75&10&5%

Boxes, Axle—
Common and Concord, not turned lb..4½@5 ¢
Common and Concord, turned, lb., 5½@6 ¢
Half Patent.....lb. 8½@9 ¢

Bait— Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances— Sash—
Caldwell new list.....50%
Pullman .....50&10@60%

Spring—
Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....50&10%
Straight Balances.....40@50%
Circular Balances.....50&10%
Large Dial.....30%

Barb Wire— See *Wire, Barb.*

Bars— Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 3¼ ¢

Towel
No. 10 Ideal, Nickel Plate..₩ gro. $2.50

Beams, Scale—
Scale Beams.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₩ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ₩ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized..₩ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....₩ gro. $7.80
No. 2 Buffalo.....₩ gro. $9.00
No. 3 Perfection Dust.....₩ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, per doz., No. 1, Jap'd, $1.30; No. 1, Tin'd, $1.50; No. B, Jap'd, $2.00; No. 2, Tin'd, $2.25.
Lyon, Jap'd, per doz., No. 2, $1.25; No. 3, $1.50.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.
Turner & Seymour Mfg. Co.:
T. & S. Dover.....$6.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (R, M, Co.)..₩ gro, net, $6.00

Bellows—
Blacksmith, Standard List.. 60&10@60&10&5%

Hand— *Net Prices.*
Inch..	*6*	*7*	*8*	*9*	*10*
Doz...	*$4.75*	*5.70*	*6.65*	*7.60*	*8.85*

Molders— *Net Prices.*
Inch..	*9*	*10*	*11*	*12*	*14*
Doz...	*$8.00*	*9.00*	*10.50*	*12.50*	*14.50*

Bells— Cow—
Ordinary goods.....70@70&5%
High grade.....70&10@70&10&5%
Jersey .....75&10%
Texas Star.....50%

Door—
Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—
Hand Bells, Polished, Brass.60&10%
White Metal.....60%
Nickel Plated.....50&10&60%
Sleigh .....60@60&67½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—
Farm Bells.....lb. 2½ ¢
Steel Alloy Church and School 50&10@60%
American Tube & Stamping Co. Gongs 70%
Table Call Bells.....50@50&10%

Belting— Leather—
Extra Heavy, Short Lap..60&65%
Regular Short Lap....60&10&65%
Standard 70%
Light Standard.....70&65%
Cut Leather Lacing.....50%
Leather Lacing Sides, per sq. ft. 25¢

Rubber—
Agricultural (Low Grade)..... 75@75&5%
Common Standard....70@70&10%
Standard .....60&65@60&10%
Extra .....60@60&5%
High Grade.....50&5@50&10%

Bench Stops— See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.....40%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $26.50.
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son's 1906 list:
Chain, Parts, Spokes.....50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—
Common Wooden.....70&10@75%
Harts St. Tackle Blocks.....50@50&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c.....40%
Paper Embossed.....40&10%

Boards, Wash— See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co.....33⅓%

Bolts—
Carriage, Machine, &c.—
Common Carriage (cut thread): ⅜ × 6 and smaller.....75@—%
Larger and Longer..65&5@—%
Phila. Eagle, $3.00 list May 21, '99 80%
Bolt Ends, list Feb. 14, '95.... 65&10@—%
Machine, ⅜ x 4 and smaller 75@—%
Machine, larger and longer.. 65&5@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:
Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz.	*$0.30*	*.35*	*.45*	*.60*	*.80*

Cast Iron Spring Foot, Jap'd:
Inch.....	*6*	*8*	*10*
Per doz.....	*$1.20*	*1.50*	*2.25*

Cast Iron Chain, Flat, Japanned:
Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.40*	*1.85*

Cast Iron Flat Shutter, Jap'd., Brass Knobs:
Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*.95*	*1.25*

Wrought Barrel Japd..80@80&10%
Barrel Bronzed.....50@50&10%
Spring .....70&10@70&10&10%
Shutter .....50&5@50&10&5%
Square Neck.....75@75&10%
Square ...66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Plow and Stove—
Plow .....65&10@—
Stove .....87½&10@—

Tire—
Norway Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84....80%
Eagle Phila., list Oct. 16, '84....82½%
Mount Carmel, list Dec. 28, '99...80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—
Borers Tap, Ring, with Handle:
Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$4 80*	*5 60*	*6.40*	*8.00*
Inch	*2¼*	*2½*		
Per doz.....	*$8.65*	*11.50*		

Enterprise Mfg. Co., No 1, $1.25; No. 2, $1.65@$1.75; No. 3, $2.50 each...25%

Boxes, Mitre—
C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection 40%
Seavey 33⅓%
Stanley R. & L. Co.: Nos. 2.0 to 460, 30%; Nos. 50 and 60.....35%

Braces—
Common Ball, American..$1.25@1.30
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60@60&5%
Stanley R. & L. Co.:
Stanley, 35%; Victor.....45%

Brackets—
Wrought Steel...80&10@80&10&5%
Griffin's Pressed Steel.....80@80&10%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf, 75%; Sink...50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods— See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—
Price per dozen.
	Quart.....	*12*	*14*
Water, Regular...	*1.40*	*1.70*	*1 90*
Water, Heavy....	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom..	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—
Hoosier.....₩ gro. $36.00

Bull Rings— See *Rings, Bull*

Butts— Brass—
Wrought, list, Sept., '96.15@—%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5
Parliament Butts.....70@70&5

Wrought Steel— *Extra, 10@10&10%*
	Discount.
Reversible and Broad..	*75&5%*
Light Reversible, Light Narrow	*75&10%*
Loose Joint, Narrow, L'ht Inside Blind, etc....	*75%*
Back Flaps, Table, Chest.	*70&10%*

Cages, Bird—
Hendryx Brass: Series 3000, 5000, 1100, 5%; 1200, 33⅓%; 200, 300, 600, 900 .....40&10%
Hendryx Bronze: Series 700, 800.. 40&10%
Hendryx Enameled.....40&10%

Calipers— See *Compasses.*

Calks, Toe and Heel—
Blunt, 1 prong.....per lb. 4@4¼ ¢
Sharp, 1 prong...per lb., 4¼@4¾ ¢
Burke's Blunt, 4@4¼ ¢; Sharp 4½@4¾ ¢

Gautier, Blunt, 4@4¼¢; Sharp 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	129.60 gro., net.

Caps, Percussion—

Eley's E. B.....55@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket.....per M 62@63¢

Primers—

Berdan Primers, $2 per M...80%
B. L. Caps (Sturtevant Shells) $2 per M.....20%
All other primers per M.$1.55@1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball....$1.40
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed.....70@70&10%
Plate.....60&10@60&10&5%
Philadelphia.....75@75&10%
Acme, Ball Bearing.....33⅓%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—

American Coil, Straight Link:

5-16	¼	5-16	⅜	7-16	½	9-16
$3.70	3.90	4.95	4.20	4.05	3.95	3.90
⅝		¾	⅞ to 1	1⅛ to 1¼ inch.		
$3.85		3.70	3.65	3.80		

German Coil.....60&10&10@70%

Halter—

Halter Chains.....60&5@60&10%
German Pattern Halter Chains, list July 2½, '97.....60&10&10%
Covert Mfg. Co, Halter.....35&5%
Covert's Saddlery Works Halter.....70%

Cow Ties—
See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Str'ght, with ring..$25.00
6½—6-2, Str'ght, with ring..$26.00
6½—8-2, Str'ght, with ring..$30.00
6½—10-2, Str'ght, with ring..$35.00
NOTE.—Add 2c per pair for Hooks. Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.
Eastern Standard Traces, Wagon Chain, &c.....60&10%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60&10%
Brass.....60&10%
Safety Chain.....70&10%
Gal. Pump Chain.....lb. 4@4½%
Covert Mfg. Co.: Breast, Halter, Heel, Rein, Stallion.....40%
Covert Sad. Works: Breast, Hold Back, Rein.....70%
Oneida Community: Am. Dog Leads and Kennel Chains, 40@40&5%
Niagara Dog Leads and Kennel Chains.....45@60&5%
Wire Goods Co.: Dog Chain.....70&10%
Universal Dbl.-Jointed Chain.....50%

Chain and Ribbon, Sash—

Oneida Community: Copper Chain, 60&5%; Steel Chain, 60%
Pullman: Bronze Chain, 60%; Steel Chain, 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft.....$1.25@$3.00
Sash Ribbon Attachments, per set..8¢

Chalk—(From Jobbers.)

Carpenters' Blue....gro., 40@—¢
Carpenters' Red....gro., 35@—¢
Carpenters' White...gro., 30@—¢
See also Crayons.

Checks, Door—

Bardsley's.....45%
Pullman, per gro.....$54.00
Ruswin.....40%

Chests, Tool—

American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests, with Tools.....30%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—Socket Framing and Firmer

Standard List...75&10@75&10&5%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co.'s: Socket Firmer No. 10.....60%; Socket Framing No. 15.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
L. & I. J. White.....30@30&5%
L. & I. J. White, Tanged.....25&5%

Tanged—

Tanged Firmers.....33 1-3@40%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181..25%

Cold—

	lb.
Cold Chisels, good quality	13@15¢
Cold Chisels, fair quality	11@12¢
Cold Chisels, ordinary	9@10¢

Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck....35%
Beach Pat., each $8.00.....35&5%
Empire.....25%
Blacksmiths'.....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Patent Chucks: Independent Lathe Chucks....40&10%; Universal, Reversible Jaws.....40%; Combination, Reversible Jaws.....40%; Drill Chucks, New Model, 25%; Standard, 40&10%; Skinner Pat. 25%; Positive Drive.....33⅓%; Planer Chucks.....30%; Face Plate Jaws.....40&10%
Standard Tool Co.: Improved Drill Chuck.....45%
Union Mfg. Co.: Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%; Scroll Combination, Nos. 82 and 84.....30%; Geared Scroll, Nos. 33, 34 and 35..35%; Independent Iron, Nos. 18 and 318.40%; Independent Steel, No. 64.....30%; Union Czar Drill, Nos. 000, 101, 103.....35%; Universal 11, 12, 16, 17, 13, 14, 15..40%; Universal, No. 42.....35%; Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....40%; Steel Face Plate Jaws, Nos. 70 and 72.....35%
Westcott Patent Chucks: Lathe Chucks.....50%; Little Giant Auxiliary Drill.....50%; Little Giant Double Grip Drill..50%; Little Giant Drill, Improved.....50%; Oneida Drill.....50%; Scroll Combination Lathe.....50%

Clamps—

Adjustable, Hammers'.....20@20&5%
Carriage Makers', P., S. & W. Co.....40&10@50%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Wood Workers, Hammers'.....40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White.....30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company: '98 Chicago Horse, each....$8.75; 1902 Chicago Horse, each..$10.75; 20th Century Horse, each..$5.00; Lightning Belt Horse, each.$15.00; Chicago Belt Horse, each.$20.00; Stewart's Enclosed Gear Horse, each.....$6.75; Stewart's Patent Sheep Shearing Machine, each.....$12.75 — 20%

Clips, Axle—

Regular Styles, list July 1, '05.80%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c.....70%
Compression Bibbs.....65&10%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list.....40%

Combs, Curry—

Metal Stamping Co.....40%

Mane and Tail—

Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.

Ordinary Goods.....75&5@75&10%
Bemis & Call Hdw. & Tool Co.: Dividers.....65%; Calipers, Double, 65%; Inside or Outside.....65%; Calipers, Wing.....60%; Compasses.....50%
Wm. Schollhorn Co.: Excelsior Dividers.....60%; Lodi Dividers.....75%

Conductor Pipe,—

L. C. L. to Dealers:

Territory:	*Galvanized Galv. Steel.*	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*
Eastern:	60&30%	60&2½%	40&10%
Central:	70%	55&7½%	40&7½%
Western and Southern:	65&10%	55&2½%	40&5%
So. Western	62½&7½%	50&5%	40&2½%

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal, each..	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	$2.70
Gal.	3	4	6	8	
Iceland, ea.	$1.80	$2.10	$2.40	$3.00	
Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15
White Enameled, 25%; Agate Lined.25%					

Coopers' Tools—
See *Tools, Coopers'.*

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair and heavier, 23@24¢; lighter than 3 lbs. to pair.....25@26¢

Cord—Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 24¢; No. 7, 24½¢; No. 6, 25½¢.
Cable Laid Italian.....lb., *A, 18¢; B, 16¢*
Common India.....lb. 10@10½¢
Cotton Sash Cord, Tw'ted.17@19¢
Patent Russia.....lb...@14¢
Cable Laid Russia...lb...@15¢
India Hemp, Braided..lb...@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted..lb. 12@13¢
Anniston Cordage Co.: ℔ lb., solid Braided, Nos. 8 to 12, $0.24; No. 7, $0.24½; No. 6, $0.25½; ℔ doz., 50 ft., Oriole, $2.00; 50 ft., Columbia, $0.85; 50 ft., Victors, $1.00; 50 ft. 6-Thread, $1.10; 60 ft. 3-Thread, $0.95; 50 ft., Manila, $1.40; 60 ft., Jute, $0.75.
Pearl Braided, cotton, No. 6, ℔ lb., 25½¢; No. 7, 25¢; Nos. 8 to 12, 24½¢
Eddystone Braided, Nos. 8, 9 and 10, 25¢; 7, 25½¢; 6, 26½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....℔ lb 23¢
Peerless: Cable Laid, Italian, 16¢; Russian, 14¢; India.....12¢; Braided India.....18¢
Pullman: Wire Sash Cord.....18%; Sash Cord Attachments, per doz.10¢
Samson, Nos. 8 to 12: Braided, per lb., Drab Cotton, 40¢; Italian Hemp, 40¢; Linen, 55¢; White Cotton or Spot....35¢; Massachusetts, White.....℔ lb 30¢; Massachusetts, Drab.....℔ lb 35¢; Phoenix, White, Nos. 8 to 12, 27¢; No. 7, 27½¢; No. 6, 28½¢.
Silver Lake, per lb.: A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

List Oct., '00.....85¢10¢10@85¢10¢10¢5%
Hendryx Standard Wire Picture Cord, 85&10%

Cradles—

Grain.....40&12½%

Crayons—

White Round Crayons, Cases, 100 gro., $6.50@$7.50 at factory, but lower prices made by jobbers

D. M. Steward Mfg. Co.: Genuine, Per gro. Round Pencil, $2.25; Square Pencil, $1.75; Flat Crayon, $2.50; Metal Workers' Crayon, $3.00; Rolling Mill Crayon, $3.00. — Case lots, 50&20%

Compo. Per gro. Round Pencil, $1.50; Square Pencil, $1.50; Flat Crayon, $1.50; Metal Workers' Crayon, $2.50; Rolling Mill Crayon, $2.50; Railroad Crayon, $4.00; Compo. Crayon, $4.00. — Case lots, 50&20%

Zelnicker's Lumber: Red, Blue, Green.....℔ gro. $6.50; Black.....℔ gro. $4.00
See also Chalk.

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, $7.00; Light.....$6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company: No. 12 M'd'm Knives, 1847..℔ doz. $3.50; Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00; Wm. Rogers & Son.....℔ doz. $2.50

Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—

American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$90

Enterprise:

Nos.	5	10	12	22	32	
Each	$2	$3	$2.75	$4.50	$6	25@25&7½%

No. 202, $1.50.....40&7½%

Dixon's	1	2	3	4
Nos.	$14.00	$17.00	$19.00	$30.00

Dixon's.....℔ doz. 40@50%

Ideal	1	2	3	4
Nos.	$14.00	$17.00	$19.00	$30.00

Ideal.....40&10@50%
Little Giant.....℔ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....25%
New Triumph No. 605, ℔ doz. $24.00.....40@50%
Russwin Food, No. 1, $24.00; No. 2, $27.00.....45&10&10%
Woodruff's.....℔ doz. 40@50%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons: Slaw, Corn Grater, &c.....40%; Kraut Cutters, 21 x 7, 26 x 8, 30 x 9.....55%; Kraut Cutters, 36 x 12, 49 x 12....40%
J. M. Mast Mfg. Co.: Slaw Cutters, 1 Knife....℔ doz. $3.00; Combined Slaw Cutter and Corn Grater.....℔ doz. $4.00
Tucker & Dorsey Mfg. Co.: Kraut Cutters.....40%; Slaw Cutters, 1 Knife..℔ gr. $18@$20; Slaw Cutters, 2 Knife..℔ gr. $22@$30

Tobacco—

All Iron, Cheap..doz. $1.25@$4.50
Enterprise.....25@30%
National, ℔ doz., No. 1, $21; No. 2, $18.....40%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger..per doz. $9.00
Iwan's Imp'red Post Hole Auger.40&5%
Vaughan Pattern Post Hole Augers, ℔ doz., $6.25
Perfection Post Hole Diggers, ℔ doz.....$8.25
Split Handle Post Hole Diggers, ℔ doz. $7.25
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.00; Pioneer.....$7.00
Never-Break Post Hole Diggers, ℔ doz., $24.00.....60%
Samson, ℔ doz. $34.00.....25%

Dividers—See *Compasses.*

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ℔ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

Drills and Drill Stocks—

Common Blacksmiths' Drill, each.....$1.50@$1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....40%
Goodell Automatic Drills..40&5@10&10%
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Point's.....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's, 40%; Weston's..40%
Ratchet, Weston's, Style H Improved.....40%
Ratchet, No. 012.....40%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Bit Stock.....60&10&10@70%
Taper and Straight Shank.....60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9.....50%
Buck Bros.' Screw Driver Bits.....30%
Champion.....50%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Gay's Double Action Ratchet.....35%
Goodell's Auto..50&10&10@50&10&10&5%
Hurwood.....40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
New England Specialty Co.....50&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s: No. 64, Varn. Handles, 65%; No. 66, 75%; Victor, 55%; Defiance..70%
Swan's: Nos. 7565 to 7568, 50%; No. 7540, 40&10%

Eave Trough, Galvanized—

Territory.	*L. C. L. Galvanized Galv. Steel.*	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*
Eastern:	80%	70&5%	40&10%
Central:	75&10&7½%	70%	40&7½%
Western and Southern:	70&20&7½%	60&15&2½%	40&5%
So. Western:	70&20%	65&2½%	40&2½%

Terms,—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I. Standard Gauge.....60&10%
No. 26.....50%

No. 24.....25%
No. 22.....20%
Copper.....50%

Elbows, Stove Pipe—

Dover, one piece.....40%
Perfect Elbows (R. M. Co.).....40%

Emery, Turkish—

¼ to 46: 5½ to 220: Flour.

Kegs ..... *lb.*	5 ¢	5½ ¢	3½ ¢
½ Kegs ..... *lb.*	5¼ ¢	5¾ ¢	3¾ ¢
¼ Kegs ..... *lb.*	5½ ¢	6 ¢	4 ¢
10-lb. cans,			
10 in case....	6½ ¢	7 ¢	6 ¢
10-lb. cans, less			
than 10.....	10 ¢	10 ¢	8 ¢
Less quantity	10 ¢	10 ¢	8 ¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice

—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's.....50&10%
Walling's.....40&10%

Cord and Weight—

Iron.....40%

Faucets—

Cork Lined.....50@50&10%
Metallic Key, Leather Lined..
60&10@70%
Red Cedar.....40&10@50%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined..50%
John Sommer's Reliable Cork Lined..
50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅛ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—

See *Plates, Felloe.*

Files— Domestic—

List revised Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103; Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—

Net Prices:

Inch	15	17	19	21
Per doz.....	$3.25	3.75	4.25	4.75

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Stowell's Giant Grindstone Hanger..
℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy, 50&10&10%; Light.....60&10%

Fodder Squeezers—

See *Compressors.*

Forks—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—

White, S'g't Bar, per doz..75@80¢
Red, S'g't Bar, per doz...$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	1	2	3	4	6
Each	$1.30	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*

Hemp.....$2.75
Cotton.....3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15

Extra, 50&10% above list.

Gates, Molasses and Oil—

Stebbins' Pattern.....80&10%

Gauges—

Marking, Mortise, &c...50&10@60%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....25%
Marking and Mortise.....60%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—

Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.50
Spike, Metal, No. 1, $4.00; 2, $4.50
Nail, Wood Handled, No. 1,
$2.50; 2, $2.60
Spike, Wood Handled, No. 1,
$4.50; 2, $4.60

Glass, American Window

See *Trade Report.*

Glasses, Level—

Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush..
25&10@50%
International Glue Co. (Martin's)..40%

Grease, Axle—

Common Grade....*gro.* $4.50@6.00
Dixon's Everlasting, 10-lb pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—

Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00 } 33⅓%
Pike Mower and Tool Grinder, each.....$6.00 }
Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—

Cow Ties.....60&10@60&10&5%
Covert Mfg. Co.:
Web.....45%
Jute Rope.....45%
Sisal Rope.....33⅓%
Cotton Rope.....45%
Hemp Rope.....45%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters.....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties.....70%
Sisal Rope Ties.....60&10%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%
E. T. Rugg & Co.:
Leather Halters.....50%
Web Halters and Webbing.....60%
Jute and Sisal Rope Halters.....60%
Jute and Sisal Horse and Cattle Ties.....60%
Cotton Horse Ties.....60%
Livery Ties, Braided.....60%

Hammers—

Handled Hammers—

Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox, Steel.....50%
Fayette R. Plumb:
Plumb, A. E. Nail.....
33⅓&7½@33⅓&10&7½%
Engineers' and B. S. Hand.....
50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'.....
40&2½@40&10&2½%

Heavy Hammers and Sledges—

Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢.....80&10%
Over 5 lb., per lb., 30¢..80&10&10%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—

Agricultural Tool Handles

Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....45@50%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50%
D Handles.....50@50&5%

Cross-Cut Saw Handles—

Atkins'.....40%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—

Auger, assorted...*gro.* $2.50@$3.00
Brad Awl.....*gro.* $1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@ $1.95; Hickory.....$1.45@$1.60
Socket Framing, Hickory,
$1.60@$1.75
File, assorted.....*gro.* $1.30@$1.40
Hammer, Hatchet, &c.
60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel.....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle.....
℔ gro. $0.85@$1.50

Hangers—

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.
Allith Mfg. Co.:
Reliable, No. 1; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50%
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....50%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00.....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion.....$2.25
Barn Door, Standard.....60&5%
Hinged.....net $6.40
Covered.....60&2%
Special.....70&5%
Lawrence Bros.:
Advance and Sterling.....60&10%
Cleveland and Peerless.....75%
Clipper, No. 75.....60%
Crown.....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant.....60&5%
Hummer.....70&5%
New York.....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60&5%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track No. 3..$2.00
Ball B'r'g St'l Track No. 10,50&10%
Roller B'r'g St'l Track No. 12,$2.15
Roller B'r'g St'l Track No. 13,$2.30
Roller B'r'g, Nos. 39, 41, 43, 70&10%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&10%
Trolley B. D. No. 17, $1.25; F. D. No. 129, $2.10; No. 121, $2.25; No. 150.....$2.35
Safety Underwriters F. D. No. 101.....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132.....50&10%
Royal, Adjustable Track No. 122.....50&10%
Ives' Wood Track No. 1.....$2.00
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43; 44, Sizes 1 and 2..70&10%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60&10%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135.....40%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas, 60%; Freight Car Door.60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator.....40%
Express.....50%
Interstate.....60&10%
Lundy Parlor Door.....50&10%
Magic, 60%; Rex Hinge Door.60%
Matchless.....60&10%
Nansen.....70&5%
Parlor Door, 50&10%; Railroad, 50&10%
Street Car Door.....50%
Steel, Nos. 300, 401, 500....50&10%
Underwriters' Fire Door....45%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back, 70%; Eagle.....70%
Climax Anti-Friction.....50&10%
Hylo Hinge, New Perfection, Pilot, Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis Pty Co.'s Kidder's Roller Bearing.50&15&10&5%

Extra 5&10% often given.

Hangers— Garment—

Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled, $27.00; 1 pair Flat Gun Metal, $12.00; 1 pair Flat Black Enameled, $7.50; 1 pair Wood Clamp, $13.00; Skirt Hangers, Folding, per gro., $21.00; Coat Hangers, Folding, per gro., $8.00; Garment Hanger Rods, Round Nickeled, per gro., $15.00; Garment Hanger Loops, Round Nickeled, per gro.....$15.00
Victor Folding.....℔ gro. $9.00
Western, W. G. Co.....70&10%

Gate—

Myers' Patent Gate Hangers, ℔ doz. net.....$4.50

Joist and Timber—

Lane Bros. Co.....30%

Hasps—

Griffin's Security Hasp.....50%
McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—

Regular list, first quality....50%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair.....	$0.75	1.35	2.70

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair.....	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	1	1½	2
Doz. pair.....	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges.....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 55.....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5....
75&10&5%
Tip Pat'n, Nos. 1, 3 & 5....10&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with L't'chs.	$2.00	2.70	5.00
Hinges only.....	1.40	2.05	3.80
Latches only.....	.70	.70	.35

New England:
With Latch.....*doz.* ...@$2.00
Without Latch...*doz.* ...@$1.60
Reversible Self-Closing:
With Latch.....*doz.* ...@$1.75
Without Latch...*doz.* ...@$1.35
Western:
With Latch.....*doz.* $1.75
Without Latch.....*doz.* $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets,

Nos.	1	2	3
Hinges with Latches..	$2.00	2.70	5.00
Hinges only.....	1.40	2.05	3.80
Latches only.....	.70	.70	1.35

Pivot Hinges

Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—

Holdback, Cast Iron...$8.50@$7.00
Non-Holdback, Cast Iron$6.25@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot, Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor..50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....30%
American.....30%
Columbia, ℔ gr., No. 14, $9.00; No. 18, $25.00
Columbia, Adj., No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Lawson Mfg. Co., Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Ball Bearing Floor Hinge....50%
Ohio Detachable Screen Door Hinge.....℔ gr. $12.00
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k, ℔ gro. pr. $9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges...65%
Heavy Strap Hinges..75%
Light T Hinges.....60%
Heavy T Hinges.....55%
Extra H'y T Hinges..70%
Hinge Hasps.....45%
Cor. Heavy Strap....75%
Cor. Ex. Heavy T..70&10%

Extra, 10&5&5% above list.

Screw Hook and Strap. { *6 to 12 in.* ..lb. 3¾¢ ; *1¼ to 20 in.* ..lb. 3½¢ ; *22 to 36 in.* ..lb. 3¾¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6½¢
⅝-inch.....lb. 7½¢
½-inch.....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
	Per doz.			
Inch	15	16	17	18
Galv. Open	$2.50	2.75	3.00	3.25
Jap. Open	$1.90	2.10	2.25	2.55
Galv. Funnel	$3.00	3.30	3.60	3.90
Jap. Funnel	$2.45	2.65	2.85	3.30

Masons' Etc.—
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $0.95
Steel Mortar, No. 158.....each $1.25

Hoes— Eye—
Scovil and Oval Pattern.....
60&10@60&10&10%
Grub, list Feb. 23, 1899.....
70&10@75&10%
D. & H. Scovil.....33⅓%

Handled—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but manyjobbers are still using list of August 1, 1899, or selling at net prices.
Crown's Weeding No. 1, $2.00; No. 2, $2.25
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 66⅔%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe..℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6¼ in.....$3.35
Acme Wedding.....℔ doz. net, $4.35
W. & C. L'ning Shuffle Hoe, ℔doz.$4.85

Hoisting Apparatus—
See *Machines, Hoisting.*

Holders— Bit—
Angular, ℔ doz. $24.00.....45&10%

Door—
Bardsley's.....45%
Empire.....50%
Pullman.....60%
Superior.....33⅓%

File and Tool—
Nicholson File Holders and File Handles.....33⅓&40%

Fruit Jar—
Triumph Fruit Jar Holder, ℔ gross, $10.80; ℔ doz.....$1.25

Hones—Razor—
Pike Mfg. Co., Belgian, German and Swaty.....50%

Hooks—Cast Iron—
Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—
Belt.....80&10@..%
Wire C. & H. Hooks:.....
75&10@75&10&10%
Columbian Hdw Co., Gem.....70&10%
Parker Wire Goods Co., King..70&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

Wrought Iron—
Box, 6 in., per doz., $1.90; 8 in., $1.25; 10 in., $3.50.
Cotton.....*doz. $1.05@$1.25*
Wrought Staples, Hooks, &c.—
See Wrought Goods

Miscellaneous—
Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25
Grass, best, all sizes, per doz.$1.60
Grass, common grades, all sizes, per doz.....*$1.30*
Whiffletree.....*lb. 5¾@6¢*
Hooks and Eyes:
Brass.....60&5@60&10&5%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See *Nails, Horse.*

Horseshoes—
See *Shoes, Horses.*

Hose, Rubber—
Garden Hose. ¾-inch:
Competition.....*ft. 5 @ 6 ¢*
3-ply Guaranteed..*ft. 8 @ 9 ¢*
4-ply Guaranteed..*ft. 10 @11 ¢*
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8 @ 9 ¢*
Fair Quality.....*ft. 10 @11 ¢*

Irons— Sad—
From 1 to 10.....*lb. 3 @3¼¢*
R. B. Sad Irons.....*lb. 3¼@3½¢*
Mrs. Potts', cents per set:
Nos.	50	55	60	65
Jap'd Tops	63	62	75	72
Tin'd Tops	70	67	80	77

New England Pressing..*lb. 3¾@4¢*

Pinking—
Pinking Irons.....*doz. 60¢*

Irons, Soldering
See *Coppers.*

Jacks, Wagon—
Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Covert's Saddlery Works:
Daisy.....60&10%; Victor, 60%
Lockport.....50%
Lane's Steel.....30&10&2%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Kettles—
Brass, Spun, Plain.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

Knives—
Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

Corn—
Wilkinson Wilcut Brand Knives and Hooks.....60%
Withington Acme ℔ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—
Standard List.....*75&5@75&10%*
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—
Serrated Edge, per doz. $5.75@6.00
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

Mincing—
Buffalo.....℔ gro. $13.00

Miscellaneous—
Farriers'.....*doz. $3.00@3.25*
Wostenholm's.....℔ doz. $3.00@3.25

Knobs—
Base, 2½-inch, Birch, or Maple, Rubber Tip.....*gro. $1.25@$1.50*
Carriage, Jap., all sizes.....
gro. 40@45¢
Door, Mineral.....*doz. 65@70¢*
Door, Por. Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

Lacing, Leather—
See *Belting, Leather—*

Ladders, Store, &c.—
Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—
L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%

Lanterns—Tubular—
Regular Tubular, No. 0.....
doz. $4.25@4.50
Lift Tubular, No. 0.....
doz. $4.75@5.00
Hinge Tubular, No. 0.....
doz. $4.75@5.00
Other Styles.....*40@40&5%*

Bull's Eye Police—
No. 1, 2¾-inch.....*$2.75@3.00*
No. 2, 3-inch.....*$3.00@3.25*

Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—
Roggin's Latches, with screw..
doz. 35@40¢

Door—
Allith Mfg. Co., Automatic, No. 400, ℔ doz.....$4.00
Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.30
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....50%
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50
Stowell's Steel.....50%

Leaders, Cattle—
Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, Hemp and Jute, 45%; Sisal, 33⅓%.

Lifters, Transom—
R. & E.....33⅓%

Lines—
Wire Clothes, Nos.	18	19	20
100 feet	$2.25	2.00	1.75
75 feet	$1.75	1.35	1.10

Anniston Waterproof Clothes, 50 ft., ℔ gro., $25.00; Gilt Edge, $23.00; Air Line, $23.00; Acme, $18.00; Alabama, $17.00; Empire, $16.00; Advance, $14.00; Eclipse, $13.50; Chicago, $11.50; Standard, $10.50; Columbia, $9.50; Allston, $13.50; Calhoun, $12.00.
Samson Cordage Works:
Solid Braided Chalk, Nos. 6 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%

Locks— Cabinet—
Cabinet Locks...33⅓@33⅓&7½%

Door Locks, Latches, &c.—
NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....40%

Elevator—
Stowell's.....50%

Padlocks—
Wrought Iron....*75&10&5@80&5%*
Net prices are general.
R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—
Ives' Patent:
Bronze and Brass, 62½%; Crescent, 50&10%; Iron, 62½%; Window Ventilating, 60%; Robinson Pat. Ventilating Sash Lock, 40%; Wrought Bronze and Brass, 55%; Wrought Steel, 55%.
Pullman Patent Ventilating Lock..25%
Reading.....40%

Machines—Boring—
Com. Upr't, without Augers,
$2.00@2.25
Com. Angl'r, without Augers,
$2.25@2.50
Swan's Improved.....40&10%
Angular.
Jennings', Nos. 1 and 4.....35&5%
Millers' Falls.....5.75
Snell's, Rice's Pat. 2.50 2.75

Corking—
Reisinger Invincible Hand Power.....
℔ doz. $18.00

Fence—
Williams' Fence Machines....each, $5.50

Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%

Ice Cutting—
Chandler's.....12½%

Washing—
Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$54.00
Champion Rotary Banner No. 1	$54.00
Standard Champion No. 1	$48.00
Standard Perfection	$36.00
Cinti Square Western	$30.00
Uneeda American, Round	$30.00

Mallets—
Hickory.....*45&5@50%*
Lignumvitæ.....*45&5@50%*
Tinners' Hickory and Applewood.....*doz. 45&5@50%*

Mangers, Stable—
Swett Iron Works.....50%

Mashers, Vegetable—
Western, W. G. Co., Potato....60&10%

Mats, Door—
Elastic Steel (W. G. Co.), new list..
50&10%
Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

Mattocks—
See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—
Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria..50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Mowers, Lawn—
NOTE.—Net prices are generally quoted
Cheapest.....*all sizes, $1.85@2.00*
Cheap.....*all sizes, $2.00@2.50*
Better Grade..*all sizes, $2.50@4.50*
	12	*14*	*16*	*18-in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental.....60&5%
Great American.....70%
Great American Ball B'r'g, new list..70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania, Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel....70&10&10&5%
Style B, Low Wheel.....70&10&5%
Style C, High Wheel.....70&10%
Style D, High Wheel.....70%
Philadelphia:
Styles M., S. C., K., T.....70&5%
Styles A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.50%

Nails—
Wire Nails and Brads, Miscellaneous.....*85&10@85&10&5%*
Cut and Wire, See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—
Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Champlain	28	26	25	24	23	.....50%
Coleman	13	12	12	11	11	.....net
New Haven	23	21	20	19	18	...40&5%

Western.....℔ lb 8¼¢
Jobbers' Special Brands.....
per lb .9@10¢

Picture—
	1½	2	2½	3	in.
Brass H'd	.45	.55	.60	.70	.. gro
Por. Head	1.10	1.10	1.10		.. gro

Nippers—
See Pliers and Nippers.

Nuts—
Cold Punched: *Off list.*
Square, Blank or Tapped..
4.90@5.00¢
Hexagon, Blank or Tapped..
5.30@5.40¢
Square, Blank, C. & T.5.20@5.30¢
Hexagon, Blank, C. & T.....
5.90@6.00¢
Hot Pressed:
Square, Blank.....*5.10@5.20¢*
Hexagon, Blank.....*5.50@5.60¢*
Square, Tapped.....*5.00@5.10¢*
Hexagon, Tapped.....*5.40@5.50¢*

Oakum—
Best.....*lb., 6½¢*
U. S. Navy.....*lb., 6¢*
Navy.....*lb., 5¢*
Plumbers' Spun Oakum.....*3¾¢*
In carload lots ½¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper.....*50&10%*
Tin or Steel.....*65&10&5@70%*
Zinc.....*65&10&5@70%*
Chase or Paragon:
Brass and Copper.....*50&10%*
Tin or Steel.....*65&10%*
Zinc.....*65&10%*
Malleable, Hammers' Imp'ed. Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can— *Per doz.*
Sprague, Iron Handle....*30@35¢*
Sprague, Wood Handle...*35@40¢*
Sardine Scissors.....*$1.75@$3.00*
National.....50&10%
Stowell's Sprague.....℔ doz. 35@45¢
Vim Tin Shear and Can Opener, ℔ doz., 75c.; per gro., $7.50

Egg—
Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

Packing—
Asbestos Packing, Wick and Rope.....*17@22¢*

Rubber—
(Fair quality goods.)
Sheet, C. I.....*11@12¢*
Sheet, C. O. S.....*11@12¢*
Sheet, C. B. S.....*12@13¢*
Sheet, Pure Gum.....*40@45¢*
Sheet, Red.....*40@50¢*
Jenkins' '96, ℔ lb 80¢.....25@25&5%

Miscellaneous—
American Packing...*lb. 7@10 ¢*
Cotton Packing.....*lb. 16@25 ¢*
Italian Packing.....*lb. 9@12½¢*
Jute.....*lb. 4@ 4½¢*
Russia Packing.....*lb. 8@11 ¢*

Pails, Creamery—
R. M. Co., with gauges—No. 1, $6.25; No. 2, $6.50 ℔ doz.

Pails, Water, Well, &c.—
See *Buckets.*

Pans— Dripping—
Standard List.....*65&10%*

Fry—
Common Lipped:
Nos.	*1*	*2*	*3*	*4*	*5*
Per doz	$0.75	0.80	0.90	1.10	1.30

Refrigerator, Galva.—
Inch	*12*	*14*	*16*	*18*
Per doz	$1.75	2.25	2.80	3.15

Roasting and Baking—
Regal, R. M. Co., ℔ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ℔ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ℔ gro.:
No.	40	50	60	140	150	160
	$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper
Asbestos:	*lb.*	
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.	*6¢*	ready roofing
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lbs., per 100 sq. ft.	*8¢*	
Mill Board, Sheet, 40 x 40 in., 1-32 to ⅛ in.	*7¢*	

Per roll
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll.....
33@40¢
Medium weight, 30 lbs. to roll,
40@45¢
Heavy weight, 40 lbs. to roll..
56@60¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....*$18.00*
Red Rope Roofing, 250 sq. ft. per roll.....*$1.75*

Tarred Paper—
1 ply (roll 300 sq. ft.), ton....
$32.50@35.50
2 ply, roll 108 sq. ft.....*55¢*
3 ply, roll 108 sq. ft.....*75¢*
Slater's Felt (roll 500 sq. ft.)..*70¢*

Sand and Emery—
Flint Paper and Cloth..*50&10@60%*
Garnet Paper and Cloth.....*40%*
Emery Paper and Cl'h..*50&10@60%*

Parers— Apple—
Advance	℔ doz.	$4.00
Baldwin	℔ doz.	$4.00
Bonanza Improved	each	$6.50
Daisy	℔ doz.	$4.00
Dandy	each	$7.50
Eureka Improved	each	$20.00
Family Bay State	℔ doz.	$15.00
Improved Bay State	℔ doz.	$36.00
Little Star	℔ doz.	$8.00
New Lightning	℔ doz.	$7.00
Reading 72	℔ doz.	$3.25

Reading 78.....per doz. $6.25
Rocking Table.....per doz. $4.20
Turn Table '98.....per doz. $6.00
White Mountain.....per doz. $5.00

Potato—
Saratoga.....per doz. $7.00
White Mountain.....per doz. $6.00

Picks and Mattocks—
List, Feb. 23, 1899.....75@75&5%
Cronk's Handled Garden Mattock, per doz., $6.40.....33⅓%

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass.....50&10@60%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Carload lots.
Standard, 2-6 in..50&10@50&10&5%
Extra Heavy, 2-6 in......65&10%
Fittings.....70&10@70&10&5%

Pipe, Merchant—
Consumers, Carloads.

	Steel.		*Iron.*	
	Blk.	*Galv.*	*Blk.*	*Galv.*
⅛ & ¼ in.	71%	55%	68%	52 %
⅜ in.	75%	59%	70%	56 %
½ in.	75%	63%	72%	60 %
¾ to 6 in.	79%	69%	76½%	66½%
7 to 12 in.	74%	59%	71½%	56 %

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 2 to 24 in.:
New England.....68%
New York and New Jersey.71%
*Maryland, Delaware, E. Pa.*73%
West. Pa. and West Va.....75%
Virginia.....76%
Ohio, Michigan and Ky.....75%
Indiana.....77%
NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested:	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—Wood Planes—
Bench, first qual......35@35&10%
Bench, second qual......45@45&10%
Molding.....50@50&10%
Bailey's (Stanley R. & L. Co.).....40%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's.....60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Unicn.....60%

Iron Planes—
Bailey's (Stanley R. & L. Co.).....40%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....35%
Ohio Tool Co.'s Iron Planes.....60%
Union.....60%

Plane Irons—
Wood Bench Plane Irons....30%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co.....35%
Union.....40%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....per doz. $8.50

Plates—
Feltoe.....*lb.* *4@4¼¢*
Self-Sealing Pie Plates (R. M. Co.), per doz. $2.00.....50%

Pliers and Nippers—
Button Pliers....75&10@75, 10, 5%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.

Gas Pipe..	7	8	10	12-in.
	$2.00	*$2.25*	*$2.75*	*$3.50*

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's.....60%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&10@40&10&10%
The Nettleton Mfg. Co. Reversible Cutting Nippers.....40%
P., S. & W. Tinners' Cutting Nippers.....40%
Wm. Schollhorn Co.:
Bernard, 33⅓%; Elm City, 33⅓%; Lodi, 50%; Paragon, 50%.
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70%
C. E. Jennings & Co.'s Iron.....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable.....40&7½%
Stanley R. & L. Co.....40%
Stanley's Duplex.....33⅓%
Woods' Extension.....33⅓%

Poachers, Egg—
Buffalo Steam Egg Poachers, per doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—
Bulk and 1-lb. papers,.....*lb.* *10¢*
½-lb. papers.....*lb.* *9@10½¢*
¼-lb. papers.....*lb.* *9¾@11¢*

Pokes, Animal—
Ft. Madison Hawkeye.....per doz. $3.25
Ft. Madison Western.....per doz. $4.00

Police Goods—
Manufacturers' Lists...25@25&5%
Tower's.....25%

Polish—Metal, Etc—
Glasbrite, No. 2, 5 lb can (powder), each, $1.25; per doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; per doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.), per doz., $3.00; No. 2 (1 qu.), $9.72....60%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, per doz. 50¢; per gro. $4.50; ½ lb boxes, per doz. $1.25; 1 lb boxes, per doz. $2.25.
U. S. Liquid, 8 oz. cans, per doz., $1.25; per gro., $12.00.
Barkeepers' Friend Metal Polish, per doz., $1.75; per gro., $18.00.
Wynn's White Silk, ½ pt. cans, per doz.....$2.00

Stove—
Black Eagle Benzine Paste, 5 lb cans, per lb 10¢
Black Eagle, Liquid, ½ pt. cans.. per doz. 75¢
Black Jack Paste, ¾ lb cans, per gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, per gr. $5.75.....10%
Dixon's Plumbago.....per lb 8¢
Fireside.....per gr. $2.50
Gem, per gr. $4.50.....10%
Japanese.....per gr. $3.60
Jet Black.....per gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. per doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....per doz. $1.00
Black Silk, 5 oz. box.....per doz. $0.75
Black Silk, ½ pt. liq.....per doz. $1.00

Poppers, Corn—
1 qt., Square.....*gro.* *$8.00*
1 qt., Round.....*gro.* *$9.00*
1½ qt., Square.....*gro.* *$10.00*
2 qt., Square.....*gro.* *$12.00*

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled.....40%
Tinned.....35%

Powder—
In Canisters:
Duck, 1 lb.....*each* *45¢*
Fine Sporting, 1 lb....*each* *75¢*
Rifle, ½-lb.....*each* *15¢*
Rifle, 1-lb.....*each* *25¢*
In Kegs:
12½-lb. kegs.....*$3.50*
25-lb. kegs.....*$4.50*
King's Semi-Smokeless:

	Shot	Gun.	Rifle.
Keg (25 lb bulk)	$6.50		
Half Keg (12½ lb bulk)	$3.50		
Quarter Keg (6¼ lb bulk)	$1.90		
Case 24 (1 lb cans bulk)	$8.50		
Half case (1 lb cans bulk)	$4.50		
King's Smokeless:			
Keg (25 lb bulk)	$12.00	$15.00	
Half Keg (12½ lb bulk)	6.25	7.75	
Quarter Keg (6¼ lb bulk)	3.25	4.00	
Case 24 (1 lb cans bulk)	14.00	17.00	
Half case 12 (1 lb c. bk)	7.25	8.75	

Robin Hood Sm'less Shot Gun..50&20%

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
Seal Presses—
Morrill's No. 1, per doz., $20.00.....50%

Pruning Hooks and Shears—
See *Shears.*

Pullers, Cork—
Invincible Cork Puller.....$21.00

Pullers, Nail—
Cyclops.....50%
Miller's Falls, No. 3, per doz., $12.00.....33⅓&10%
Morrill's No. 1, Nail Puller, per doz. $20.00.....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, case lots, per doz., No. 2, $6.00; No. 3, $5.50.
Giant No. 1, per doz. $18; No. 2, $16.50; No. 3, $15.....33⅓%
Staple Pullers.....60%
Parrot Tack and Stub Puller, per doz., 75c.; per gro., $6.00

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle,				
doz.	*$0.30*	*.55*	*.60*	*1.05*
Hay Fork, Swivel or Solid Eye.				
doz., ¼ in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz.	*$0.65*	*.85*	*1.20*	
Inch	1¼	1½	1¾	2
Screw, doz.	*$0.16*	*.19*	*.23*	*.30*
Inch	1¾	2	2¼	2½
Side, doz.	*$0.25*	*.40*	*.55*	*.60*
Inch	1½	1¾	2	2½

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&13%

Sash Pulleys—
Common Frame; Square or Round End, per doz, 1¾ and 2 in......*16@19¢*
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in.....*17@19¢*
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... per doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal.....70&10%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—
Cistern.....60@60&10%
Pitcher Spout.....80@80&10%
Wood Pumps, Tubing, &c..45@50%
Barnes Dbl. Acting (low list).....50%
Barnes' Pitcher Spout.....75&10&5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....per doz. $6.75
Flint & Walling's Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list).....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$6.00
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50&10%

Pump Leathers—
Plunger and Lower Valve—Per gro.:

Inch...	2	2¼	2½	2¾
	$2.20	*2.50*	*2.75*	*3.00*
Inch...	3	3¼	3½	3¾ 4
	$3.30	*3.60*	*3.85*	*4.10 4.40*

Plunger Cup Leathers—Per 100:

Inch...	2½	3	3½	4
	$2.75	*3.85*	*5.00*	*6.00*

Punches—
Saddlers' or Drive, good..... *doz. 50@75¢*
Spring, single tube, good quality.....*$1.75@2.00*
Revolving (4 tubes)..... *doz. $3.50@3.75*
Bemis & Call Co.'s Cast St'l Drive.50%
Hemis & Call Co.'s Check.....55%
Morrill's Nos. 1AA, 1A, 1B, 1C, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Lodi, 50%; Paragon.....50%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co...40%
Tinners' Solid, P., S. & W. Co., per doz., $1.44.....60%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron.... *2½@2¾¢*
Sliding Door, Wrought Brass, 1½ in., lb., 36¢.....*30%*
Allith Mfg. Co.: Reliable Hanger Track.....50%
Cronk's:
Double Braced Steel Rail..per ft. 2¾ c
O. N. T. Rail.....2½¢
Griffin's:
xxx, per 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, per 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, per 100 ft., 1 in., $3.40; 1¼ in., $4.10.
O. N. T., per 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....per 100 ft. $4.00
Lawrence Bros.:
per 100 ft. No. 201, $4.00; No. 202, $4.00
New York, 1 x 3-16 in., per 100 ft., $2.75
McKinney's:
Hinged Hanger Rail, per ft., 11¢..50%
None Better.....per ft. 3¾¢
Standard.....per ft. 4¢
Myers' Stayon Track.....60&10%
Richards' Mfg. Co.:
Common, 1 x 3-6 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, per ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard.....60%
Stowell's:
Cast Rail.....per ft. 1¾¢
Steel Rail, Plain.....25%
Wrought Bracket, 1 3-16 in....per ft. 3¢
Wrought Bracket, 1¼ x 5-16..per ft. 7¢
Swett's Hylo, per ft. 11¢.....60%
P. L. B. Steel Rail.....per 100 ft. $3.00
No. 0, 1 x 3-16.....per 100 ft. $2.75

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, per doz., net.....$4.25
Cronk's:
New Champion Garden, per doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, per doz. 12 teeth, $15.00; 14, $16.50; 16, $18.00.....80%
Queen City Lawn, per doz., 20 teeth, $3.45; 24, $3.60.....net.
Anticlog Lawn, per doz.....$4.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth.....per doz. $3.45
Lawn Queen, 24-tooth.....per doz. $3.60
Paragon, 20-tooth.....per doz. $2.75
Paragon, 24-tooth.....per doz. $3.00
Steel Garden, 14-tooth....per doz. $2.40
Malleable Garden, 14-tooth, per doz. $1.75@2.00
Weldless Steel Garden.....75&5%

Rasps, Horse—
Disston's.....75%
Heller Bros.'.....70&5@70&10&5%
McCaffrey's American St'd...60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—
Boras—I C.....60%
Fox Razors, per doz., No. 42, $20.00; No. 44, $20.00; No. 82, Platina, $25.00. } Dis. 40%
Red Devil.....50%
Silberstein:
Carbo Magnetic, $18.00; Griffon, No. 65, $15.00; Griffon, No. 90, $12.00; all other Razors, 40%.

Safety Razors—
Kampfe Bros.:
Star Safety, 25%; Star Interchangeable, 25%; Star Safety Corn, 25%.
Silberstein.....40%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 96 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P, 33½%; 2904 PN, 33½%; 0924 N, 33½%; 02084 N, 33½%; 002904 PN, 33½%; 802 N, 33½%.....25%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed.....70&10%

Revolvers—
Single Action.....95¢@$1.00
Double Action, except 44 cal.$1.85
Double Action, 44 caliber....$2.00
Automatic.....$3.25
Hammerless.....$3.75

Riddles, Hardware Grade—
16 in......*per doz.* *$2.50@$2.75*
17 in......*per doz.* *$2.75@$3.00*
18 in......*per doz.* *$3.00@$3.25*

Rings and Ringers—Bull Rings—

	2	*2½*	*3 inch.*
Steel	*$0.70*	*0.75*	*0.80 doz.*
Copper	*$1.00*	*1.15*	*1.40 doz.*

Rea's Improved Self-Piercing, Copper, 2 in., per doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—
Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... *doz. 50@55¢*
Hill's Ringers, Malleable Iron.. *doz. 70@75¢*
Blair's Rings...*per gro.$4.75@5.25*
Blair's Ringers.per doz. $0.60@ .65
Brown's Rings..per gro.$5.00@5.50
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—
Copper.....45@45&5%
Iron or Steel.....75@75&5%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 23@25¢; Tin boxes, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Acme, Stowell's Anti-Friction.....50%
Cronk's Stay No. 65, $0.90; No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56.....$0.84
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%
Stowell's Barn Door Stay..per doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....per doz. 65¢
Hinge Adjustable Stay.....per doz. 90¢

Rope—
Manila, 7-16 in. diam. and larger:
Pure.....*lb.,* *12½¢*
Sisal, 7-16 in. diam. and larger:
Pure.....*lb.,* *9¢*
Sisal, 7-16 in. diam. and larger:
No. 2 quality.....*lb.,* *7¾¢*
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed.....*lb.,* *7¾¢*
Pure.....*lb.,* *9¢*
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred:
Mixed.....*lb.,* *7¾¢*
Pure.....*lb.,* *9¢*
Cotton Rope:
Best, ¼-in. and larger.16½@18¢
Medium, ¼-in. and larger, *15½@16½¢*
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope:
Thread, No. 1, ¼-in. & up, lb.7½¢
Thread, No. 2, ¼-in. & up, lb..7¢
Old Colony Manila Transmission Rope.....per lb 17½¢

Wire Rope—
Galvanized.....*37½&2½%*
Plain.....*45&2½%*

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 45%; Sisal.....33⅓%
Covert Saddlery Works.....60&5%

Rulers, Desk—
Stimpson & Son:
Boxwood and Maple.....33&10%

Rules
Boxwood ..... 60&10@10%
Ivory ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ..... 60@60&10%
Flexifold ..... 27½&10&2½%
Ivory ..... 35@35&10&10%
Miscellaneous ..... 50@50&10&10%
Combination ..... 55@55&10%
Stationers' ..... 10@10&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber 60%
Stanley R. & L. Co.:
Boxwood 62½%
Ivory 45%
Miscellaneous 60%
Zig Zag 40%
Zig Zag, Pin Joint 42½%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins':
Circular 50%
Band ..... 50&10@60%
Cross Cuts ..... 35&5%
Mulay, Mill and Drag 50%
One-Man Saw, 40%; Wood Saws, 40%; Hand, Compass, &c., 40%.
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth..50%
Band, 2 to 14 in. wide 60%
Band, ¼ to 1¾ 60%
Crosscuts 50%
Narrow Crosscuts 55%
Mulay, Mill and Drag 50%
Framed Woodsaws 35%
Woodsaw Blades 35%
Woodsaw Rods 25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c 25%
Butcher Saws and Blades 35%
C. E. Jennings & Co.'s:
Back Saws 25%
Butcher Saws 30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws 30%
Hand Saws ..... 20&2½%
Wood Saw Blades 35%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws 50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws ..... 35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws....40&10@50%
Butcher Saws Blades ..... 35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saws—
Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades 25%
Keystone 40%
Hack Saw Frames 30%
Fitchburg File Works, The Best...35%
C. E. Jennings & Co.'s
Hack Saw Frames, Nos. 175, 180.... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades 40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades...35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades 35%
Diamond Hack Saw Frames 50%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades...30&10&5%
Sterling Hack Saw Frames...30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades 25%
Victor Hack Saw Frames 40%

Scroll—
Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $4.00 ..... 15&10%

Scalers, Fish—
Covert's Saddlery Works ..... 60&10%

Scales—
Family, Turnbull's ..... 50@50&10%
Counter:
Hatch, Platform, ½ oz. to ¼ lbs. ..... *doz. $5.50*
Two Platforms, ½ oz. to 8 lbs. ..... *doz. $18.00*
Union Platform, Plain $1.70@1.90
Union Platform, Stpd $1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Grocers' Trip Scales 50%
Chicago Scale Co.:
The "Little Detective" ....25 to 50%
Union or Family No. 2 ..... 40%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list)..25@35%
"The Standard" Portables 50%
"The Standard" R. R. and Wagon..50%

Scrapers—
Box, 1 Handle ..... *doz. $2.00@2.25*
Box, 2 Handle ..... *doz. $2.50@2.60*
Ship ..... *Light, $2.00; Heavy, $4.50*
Adjustable Box Scraper (S. R. & L. Co.), $6.00 ..... 45%
Chapin-Stephens Co., Box, 30@30&10&10%

Screens, Window and Frames—
Maine Screen Frames ..... 40&10&5%
See also *Doors.*

Screws—Bench and Hand
Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼ .$3.50@3.75
Bench, Wood ..... 25@30%
Hand, Wood ..... 25@30%
R. Bliss Mfg. Co., Hand ..... 35@30&10%
Chapin-Stephens Co., Hand..30@30&10%
Ohio Tool Co., Bench and Hand..30%

Coach, Lag and Hand Rail—
Lag, Cone Point, list Oct. 1, '99 ..... 75&15%
Coach, Gimlet Point, list Oct. 1, '99 ..... 75&10%
Hand Rail, list Jan. 1, '81 ..... 70&10@75%

Jack Screws—
Standard List ..... 75&10@80%
Millers Falls ..... 50&10&10%
Millers Falls, Roller ..... 50&10%
P., S. & W. 50%
Swett Iron Works ..... 75@80%

Machine—
List Jan. 1, '98:
Flat or Round Head, Iron ..... *50@50&10%*
Flat or Round Head, Brass ..... *50@50&10%*

Set and Cap—
Set (Iron) ..... 80@80&5%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap 75%
Hex. Hd. Cap 75%
Rd. Hd. Cap ..... 60&10%
Fillister Hd. Cap ..... 60&10&10%

Wood—
List July 23, 1903.
Flat Head, Iron ..... 87½&10@..%
Round Head, Iron ..... 85 &10@..%
Flat Head, Brass ..... 82½&10%
Round Head, Brass ..... 80 &10@..%
Flat Head, Bronze ..... 77½&10@..%
Round Head, Bronze ..... 75 &10@..%
Drive Screws ..... 87½&10%

Scroll Saws—
See *Saws, Scroll.*

Scythes—
	Per doz.
Grass, No. 1, Plain	$6.25@6.75
Clipper, Bronzed Webb	$6.50@7.00
No. 3 Clipper, Pol'd Webb	$6.75@7.25
No. 6 Clipper and Solid Steel,	$7.00@7.50
Bush, Weed and Bramble, No. 2	$6.50@7.00
Grain, No. 1	$8.25@8.75
Bronzed Webb, No. 1	$8.50@9.00
Nos. 3 and 4 Clipper, Grain	$8.75@9.25
Solid Steel, No. 6	$9.25@9.75

Seeders, Raisin—
Enterprise ..... 25@30%

Sets— Awl and Tool—
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 ..... 15&10%

Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz sets $9.00

Sets, Nail—
Octagon ..... *gro. $3.50@3.75*
Buck Bros 27½%
Cannon's Diamond Point, ℔ gro. $12.40
Mayhew's ..... ℔ gro. $9.00
Snell's Cor'gated, Cup Pt... ℔ gro. $7.20
Snell's Knurled, Cup Pt.... ℔ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt. ℔ gro. $7.50

Rivet—
Regular list ..... 75@75&10%

Saw—
Aiken's:
Genuine ..... 50&10%
Imitation ..... 50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut 30%
Plate 20%
Disston's Star and Monarch 25%
Morrill's No. 1, $15.00 ..... 50%
Nos. 3 and 4, Cross Cut, $20.00 ..... 50%
No. 5, Mill, $30.00 ..... 50%
Nos. 10, 11, 95, $15.00 ..... 50%
No. 1 Old Style, $10.00 ..... 50%
Special, $16.25 ..... 50%
Giant Royal Cross Cut.... ℔ doz. $8.00
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

Shaving—
Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s 60%

Sharpeners, Knife—
Chicago Wheel & Mfg. Co 70%
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz $1.50
Mounted Kitchen Sand Stone, ℔ doz $1.50
Natural Grit Carving Knife Hones, ℔ doz $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz $1.50
Quick Edge Pocket Knife Hones, ℔ doz $2.50
} 3% 2%

Skate—
Smith & Hemenway Co 20%

Shaves, Spoke—
Iron ..... *doz. $1.10@1.25*
Wood ..... *doz. $1.75@2.25*
Bailey's (Stanley R. & L. Co.) 45%
Razor Edge (Stanley R. & L. Co.)..35%
Chapin-Stephens Co ..... 30@30&10&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%
Wood's F1 and F2 ..... 50%

Shears—
Cast Iron..	7	8	9 in.
Best	$16.00	18.00	20.00 gro.
Good	$13.00	15.00	17.00 gro.
Cheap	$5.00	6.00	7.00 gro.

Straight Trimmers, &c.:
Best quality Jap ..... 70@70&10%
Best quality, Nickel ..... 60@60&10%
Fair quality, Jap ..... 80@80&5%
Fair quality, Nickel ..... 75@75&10%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
Wilkinson's Sheep, 1900 list, 30&10&5%
Grass, 50&10%; Horse or Mule, 50&10%

Tinners' Snips—
Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 40&10@50%
Forged Handles, Steel Blades, Berlin, 50@50&5%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s, 6¼ to 10 in 50%
Niagara Snips 40%
P., S. & W. Forged Handles 20%

Pruning Shears—
Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook, ℔ doz. $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....50&10%
P., S. & W. Co 33⅓%
Wilkinson's Hedge, Wilcut Brand, 60&10%
Wilkinson's Lawn and Border, Wilcut Brand ..... 60&10%

Sheaves—Sliding Door—
Stowell's Anti-Friction 50%
Reading 40%
R. & E. list 33⅓%
Wrightsville Hatfield Pattern 80%

Sliding Shutter—
Reading list 40%
R. & E. list 33⅓%

Shells—Shells, Empty—
Brass Shells, Empty:
Climax, Club, Rival, 10 and 12 gauge ..... 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge 20%
Climax, Union, League, New Rival, 10 and 12 gauge 25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge 20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge 33⅓%
Robin Hood, Low Brass ..... 20&5%
Robin Hood, High Brass ..... 30&5%

Shells, Loaded—
Loaded with Black Powder 40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass 50%
Comets, High Brass ..... 50&10&5%

Shoes, Horse, Mule, &c.—
F.o.b. Pittsburgh:
Iron ..... per keg *$4.00*
Steel ..... per keg *$3.75*
Burden's, all sizes ..... ℔ keg $3.90

Shot—
Drop, up to B, 25-lb. bag *$1.85*
Drop, B and larger ..... *per 25-lb. bag, $2.10*
Buck, 25-lb. bag *$2.10*
Chilled, 25-lb. bag *$2.10*
Dust, 25-lb. bag *$2.30*

Shovels and Spades—
Association List, Nov. 15, 1902 ..... 40%

Snow Shovels—
Long Handle ..... *$2.75@$3.00*
Wood and Mall, D. Handle ..... *$3.25@$3.50*

Sieves and Sifters—
Hunter's Imitation ..... *gro. $9.50@10.00*
Hunter's Genuine ..... *per gro. $12.00@12.50*
Buffalo Metallic Blued, R. M. Co., ℔ gr.

14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker (Barler's Pat.) Flour Sifters, ℔ doz., $2.00 ..... 20%

Sieves, Seamless Metallic
—Per dozen.—

Mesh	14	16	18	20
Iron Wire	$1.05	1.05	1.10	1.20
Tinned Wire	$1.15	1.15	1.20	1.30

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested ..... *doz. $0.90@0.95*
Mesh 20, Nested ..... *doz. $1.00@1.05*
Mesh 24, Nested ..... *doz. $1.30@1.40*

Sinks, Cast Iron—
Painted, Standard list:
12 x 12 to 22 x 36 in. ..... *60&5%*
20 x 40 to 24 x 50 in. *55%*
24 x 60 to 24 x 120 in. *35%*
Barnes' low list:
Up to and including 20 x 36 in....60%
20 x 40 to 24 x 50 in 55%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—
Cast Iron ..... *80@80&10%*
Steel ..... *40@40&10%*

Slates, School—
Factory Shipments.
"D" Slates ..... *50@50&10%*
Eureka, Unexcelled Noiseless ..... *60&5 tens*
Victor A, Noiseless ..... *60&5 tens &5%*

Slaw Cutters—See *Cutters.*

Snaps, Harness—
German ..... *40@40&10%*
Covert Mfg. Co.:
Derby, 30&2½; Yankee, 30&2½; Yankee Roller, 30&2½ 30%
High Grade, 45%; Trojan 45%
Jockey 35%
Covert's Saddlery Works:
Crown, 60%; German, 60%; Model, 60%; Triumph, 60%.
Oneida Community:
Harness Snaps, 1 inch ..... 60&5%
Swivel Snaps 60%
Swivels 50%

Snaths—
Scythe *50%*

Snips, Tinners—See *Shears.*

Spoons and Forks—
Silver Plated—
Good Quality ..... *50&10@60&5%*
Cheap ..... *60@60&10%*
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous—
German Silver ..... *60@60&5%*
Cattaraugus Cutlery Co.:
Seneca Silver 50%

Tinned Iron—
Teas ..... *per gro. 45@50¢*
Tables ..... *per gro. $0.50@$1.00*

Springs— Door—
Chicago (Coil) ..... 40&10%
Gem (Coil) 20
Pullman (Coil) 25%
Reliance (Coil) ..... 40&10%
Star (Coil) 30%
Torrey's Rod, 39 in. ..... ℔ doz. $1.10

Carriage, Wagon, &c.—
1¼ in. and Wider:	Per lb
Black	4@4¼¢
Half Bright	4@4¼¢
Bright	4½@4¾¢

Painted Seat Springs:
1½ x 2 x 26 ..... *per pr. 42¢*
1½ x 3 x 28 ..... *per pr. 70¢*

Sprinklers, Lawn—
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24 ..... 30%
Pleuger & Henger Mfg. Co.:
Cactus, 70%; Japanese, 75%; Nationals, 65%.

Squares—
Nickel plated } *List Jan. 5, 1900.*
Steel and Iron } *75&10@75&10&5%*
Rosewood Hdl. Try Square and T-Bevels ..... *60&10&10@70%*
Iron Hdl. Try Squares and T-Bevels ..... *40&10@40&10&10%*
Disston's Try Sq. and T-Bevels....70%
Winterbottom's Try and Miter, No. 1, 40%; No. 2 ..... 50%

Squeezers, Lemon
Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... *doz. $1.00*
Good Grade ..... *doz. $1.25*
Tinned Iron ..... *doz. $0.75@1.25*
Iron, Porcelain Lined ..... *doz. $1.75*

Staples—
Barbed Blind ..... *lb. 6@6½¢*
Electricians', Association list ..... *80&10&10&10%*
Fence Staples, Plain, $2.25; Galvanized *$2.55*
Poultry Netting Staples ..... *per lb. 3½@3½¢*
Grand Crossing Tack Co.'s list..80&10%

Steels, Butchers'—
Dick's 30%
Foster Bros. 30%
C. & A. Hoffmann's 40%

Steelyards— ..... 30@30&10%

Stocks and Dies—
Blacksmiths' ..... *50@50&10%*
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates 25%

Stoners, Cherry—
Enterprise ..... 25@30%

Stones—Oil, &c.
Chicago Wheel & Mfg. Co., 1904 list:
Gem Corundum Oil, Double Grit..60%
Gem Corundum Axe, Single or Double Grit 60%
Gem Corundum Slips 60%
Gem Corundum Razor Hones....50%
Pike Mfg. Co., 1904 list: ℔ lb.
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in..50¢
Washita St., No. 1, 4 to 8 in..40¢
Washita St., No. 2, 4 to 8 in..30¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
} 33⅓%
India Oil Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks..33⅓%

Hindostan No. 1, R'g'lar, ₱ lb 8¢
Hindostan No. 1, Small, ₱ lb 10¢
Axe Stones (all kinds)
Turkey Oil Stones, Extra, 5 to 8 in., ₱ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips 40¢
Sand Stone 6¢
} 33⅓%

Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ₱ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots ₱ gro. $9.00
One gross or more ₱ gro. $7.20
Lots of 10 gross or more ₱ gro. $6.00
Pike Mfg. Co., 1901 list:
Black Diamond S. S. ₱ gro. $12.00
Lamoille S. S. ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.00
Green Mountain S. S. ₱ gro. $6.00
Extra Indian Pond S.S. ₱ gro. $7.50
No. 1 Indian Pond S.S. ₱ gro. $7.00
No. 2 Indian Pond S.S. ₱ gro. $4.50
Leader Red End S. S. ₱ gro. $4.50
Quick Cut Emery ₱ gro. $10.00
Pure Corundum ₱ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $13
Balance of 1904 list 33⅓%
} 50&10%

Stoppers, Bottle—

Victor Bottle Stoppers ₱ gro. $9.00

Stone Bench—

Millers Falls 15&10%
Morrill's, ₱ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

Door—

Chapin-Stephens Co. 60@60&10%

Plane—

Chapin-Stephens Co. 20%

Straps— Box—

Cary's Universal, case lots 25&20%

Hame—

Covert's Saddlery Works 60&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. *60@60&10%*
Socket doz. $1.60
Bullard, ₱ doz. $4.00
Excelsior Stretcher and Tack Hammer Combined, ₱ doz. $6.00 20%

Strops, Razor—

Star Diagonal Strop 25%

Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%

Sweepers, Carpet—

National Sweeper Co.: ₱ doz.
Louis XV, Roller Bearing, Gold Plated $120.00
Hepplewhite, Roller Bearing, Silver Plated $72.00
Sheraton, Roller Bearing, N'kel. $60.00
Ye Mission, Roller Bearing, Oxidized Coppered $36.00
Transparent, Roller Bearing, Plate Glass top, Nickeled $36.00
National Queen, Roller Bearing, Fancy Veneers $27.00
Loyal, Roller Bearing, Veneers, Nickeled $25.00
Triple Medal, Roller Bearing, Nickeled $24.00
Marion, Roller Bearing, N'kel. $24.00
Marion Queen, Roller Bearing, Nickeled $21.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller Bearing, Jap. $20.00
Perpetual, Regular B'r'gs, N'kel. $20.00
Perpetual, Regular B'r'gs, Jap. $18.00
Monarch Extra (17 in. case), Roller Bearing, Nickeled $36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned $33.00
Auditorium (26 in. case), Roller Bearing, Nickeled $54.00
Mammoth (30 in. case), Roller Bearing, Nickeled $60.00

NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $4.50 per dozen on twenty-five-dozen lots.

Streator Metal Stamping Co.:
Model E, Sanitaire ₱ doz $25.00
Model A, Sterling ₱ doz. $25.00
Model B, Sterling, Nickeled ₱ doz. $23.00
Model B, Sterling, Japanned ₱ doz. $21.00
Model C, Sterling ₱ doz. $21.50
Model D, Sterling ₱ doz. $19.50

Tacks, Finishing Nails, &c.

New List, May 1, 1905.

American Carpet Tacks 90&10@—%
American Cut Tacks 90&10@—%
Swedes Cut Tacks 90&10@—%
Swedes Upholsterers' 90&50@—%
Gimp Tacks 90&50@—%
Lace Tacks 90&10@—%
Trimmers' Tacks 90&10@—%
Looking Glass Tacks 65@—%
Bill Posters' and Railroad Tacks 90&50@—%
Hungarian Nails 85@—%
Finishing Nails 70&10@—%
Trunk and Clout Nails 80@—%

NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.

Miscellaneous—

Double Pointed Tacks 90&5 *or 6 tens*

See also Nails, Wire.

Tanks, Oil—

	Each.
Emerald, R. M. Co. 30-gal.	$3.40
Emerald, R. M. Co. 60-gal.	$4.25
Queen City, R. M. Co. 30-gal.	$3.65
Queen City, R. M. Co. 60-gal.	$4.50

Tapes, Measuring—

American Asses' Skin .50@—%
Patent Leather 25@30&5%
Steel 33 1-3&5%
Chesterman's 25@25&5%
Eddy Asses' Skin 40&10@50%
Eddy Patent Leather 25@30&5%
Eddy Steel 40@40&10%
Keuffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger *per 100 lbs. $2.75@$3.00*

Thermometers—

Tin Case 80&10@80&10&5%

Ties, Bale—Steel Wire—

Single Loop 80&2½%
Monitor, Cross Head, &c. 70%

Brick Ties—

Niagara Brick Ties 25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works 60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White 20@20&5%

Hay—

Myers' Hay Tools 50%
Stowell's Hay Carriers, 50%; Hay Forks, 50%; Fork Pulleys, 50%.

Miniature—

Smith & Hemenway Co.'s 25%

Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. *$1.15@$1.25; gro. $11.50@12.00*
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida 75@75&5%
Newhouse 45@45&5%
Hawley & Norton 65%
Victor 70&10%
Oneida Community Jump 50%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes *8½@9¢*
Mouse, Round or Square Wire. *doz. 85@90¢*

Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ₱ doz. $13.25
No. 3, Rat, ₱ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ₱ doz. $5.25; case of 72 ₱ gro. $4.70 doz.
No. 4, Mouse, ₱ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ₱ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E I 50%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ₱ gro. $6.00
Rose Brick and Plastering 25&5%
Woodrough & McParlin, Plastering 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks ₱ doz. $16.00
Grocery ₱ doz. $15.00
Daisy Stove Trucks, Improved Pattern 60
McKinney Trucks each $10.00
Model Stove Trucks ₱ doz. $18.50

Tubs, Wash—

No. 1 2 3
Galvanized, per doz. $4.25 4.75 5.25
Galvanized Wash Tubs (R. M. Co.):
No. 2 10 20 30
Per doz., net $5.70 6.30 7.20 8.60 7.20 9.10

Twine, Miscellaneous—

Flax Twine: *BC. B.*
No. 9, ¼ and ½-lb. Balls .22@24¢
No. 12, ¼ and ½-lb. Balls .18@20¢
No. 18, ¼ and ½-lb. Balls .16@18¢
No. 24, ¼ and ½-lb. Balls .16@18¢
No. 36, ¼ and ½-lb. Balls .15@17¢
Chalk Line, Cotton ¼-lb. Balls 25@30¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz. 10@18¢
Cotton Wrapping, 5 Balls to lb., acording to quality .14½@20¢
American 2-Ply Hemp, ¼ and ½-lb. Balls 13@14¢
American 3-Ply Hemp, 1-lb. Balls 13@14¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) .9¢
India 3-Ply Hemp, 1-lb. Balls .9¢
India 3-Ply Hemp, 1½-lb. Balls. 7½@8½¢
2, 3, 4 and 5-Ply Jute, ½-lb. Balls 9½@10½¢
Mason Line, Linen, ½-lb. Bls. .6¢
No. 24 Mattress, ¼ and ½-lb. Balls .7¢
Wool, 3 to 6 ply .B 7¢; A 7½¢

Vises—

Solid Box 60%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 10%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50.
Machinist and Tool Makers' No. 4A, $12.50; No. 5A, $7.00; No. 6A, $10.00; No. 10A, $22.50.
Presto Quick Acting 25@25&5%
Tiger Machinists' 40%
Fisher & Norris Double Screw 15&10%
Hollands':
Machinists' 40@40&5%
Keystone 65&5&70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch, 50%; Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Perfect, 20%; Lightning Grip 20%
Merrill's 20%
Millers Falls 60&10%
Parker's:
Victor, 20@25%; Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Snediker's X. L. 33⅓%
Stephens' 33⅓%
Williamson Mfg. Co. Double Swivel 40&5%

Saw Filers—

Disston's D 3 Clamp and Guide, ₱ doz. $30. 25%
Perfection Saw Clamps, ₱ doz. $4.50
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip, 15%; Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60&10%
Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe: 87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Williamson Mfg. Co. Double Swivel Combination Pipe 40&5%

Wads—*Price per M.*

B. E., 11 up	.60¢	
B. E., 9 and 10	.70¢	
B. E., 8	.80¢	
B. E., 7	.80¢	
P. E., 11 up	$1.00	
P. E., 9 and 10	1.25	
P. E., 8	1.50	
P. E., 7	1.50	
Ely's B. E., 11 and larger	$1.70@1.75	
Ely's P. E., 12 to 20	$3.00@3.25	

Dis. 15%

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled 55%
Ground 60%
Plain or Unground 65%
Country Hollow Ware, per 100 lbs. $2.75
White Enameled Ware:
Maslin Kettles 70%
Covered Wares
Tinned and Turned 40%
Enameled 50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware 60%
Iron Clad Ware 70&10%
Lava, Enameled 40&10%
Never Break Enameled 50%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Spiders and Griddles 65@65&5%
Avery Kettles 60%
Porcelained 50&5@50&10%
Never Break Spiders and Griddles 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles 65&5%
Solid Steel Kettles 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone 40@40&10%

Washboards—

Solid Zinc: ₱ doz.
Crescent, family size, bent frame $3.25
Ited Star, family size, stationary protector $3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.90
Cable Cross, family size, stationary protector $3.15
Single Zinc Surface:
Naiad, family size, open back, perforated $2.65
Saginaw Globe, protector, family size, ventilated back $2.50
Brass Surface:
Brass King, Single Surface, open back $3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.25
Glass Surface:
Glass King, Single Surface, open back $3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.25

Washers—Leather, Axle—

Solid 80&10@80&10&10%
Patent 90@90&5%
Coil: ¾ 1 1¼ 1¼ *Inch.*
10¢ 11¢ 12¢ 13¢ *per box*

Iron or Steel—

Size bolt. 5-16 ¾ ⅞ ⅞ ¾
Washers $5.40 4.50 3.20 3.00 2.80
The above prices are based on $6.00 off list.

In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots *per lb. 1¾@2¢*

Weather Strip—Flexible Felt—

Lined, per 100 ft., $2; $3; $4 40&10%
Moore's Unlined, per 100 ft., $2; $3; $4 50&10%

Wedges—

Oil Finish .lb. 2.70@2.80¢

Weights—Hitching—

Covert Mfg. Co. 40%
Covert's Saddlery Works 60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District $27.50@$28.00
Southern Territory $20.00@$23.00
Western and Central Districts $23.00@$25.00

Wheels, Well—

8-in., $1.55; 10-in., $2.00; 12-in., $2.50; 14-in., $4.00.

Wire and Wire Goods—

Bright and Annealed:
6 to 9 80%
10 to 18 80&2½%
19 to 26 80&7½%
27 to 36 80&2½%
Galvanized:
6 to 9 75&5%
10 to 14 75&7½%
15 to 16 72½&10&2½%
19 to 26 75%
27 to 36 72½%
Coppered:
6 to 9 75&5%
10 to 14 75&7½%
15 to 18 72½&10&2½%
19 to 26 75&10&5%
27 to 36 75%
Tinned:
6 to 14 75&10&2½%
15 to 18 75&7½%
Annealed, Steel and Tinned, on Spools .70&10&10@70&10&10&10%
Brass and Copper on Spools 60&5@60&10&5%
Brass, list Feb. 26, '96 15%
Copper, list Feb. 26, '96 25%
Cast Steel Wire 50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24 '03 .90&20@90&25%
Brass Cup Hooks and Brass Screw Hooks .85@—%

Wire Cloth and Netting—

Galvanized Wire Netting 80&5@80&10%
Painted Screen Cloth, 100 ft., *$1.00@1.10*
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft. 3 ¢
Nos. 4 and 5 Mesh, sq. ft. 3½¢
No. 6 Mesh, sq. ft. 3½¢
No. 8 Mesh, sq. ft. 4 ¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural .75&10&5@80%
Alligator or Crocodile .70&10@75%
Baxter Pattern S Wrenches 70&5@70&10%
Drop Forged S .45@45&5%
Acme 60&10%
Alligator Pattern, 70%; Bull Dog .70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Bemis Pipe 60%
Combination Black 40&5%
Merrick Pattern 50
Boardman's 40%
Coes' Genuine Knife Hdl. 40&10&5&3
Coes' Genuine Steel Hdl. 40&10&5&5
Coes' Genuine Key Model. 40&10&5&5
Coes', Genuine Hammer Handle 40&10&5&5%
Coes' "Mechanics'" 40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 50&10%
Elgin Wrenches, ₱ doz. $6.25
Elgin Rethreading Attachment, one die, ₱ doz. $6.25
Elgin Extra Dies, ₱ doz. $3.00
Elgin Extra Jaws, ₱ doz. $1.75
Elgin Monkey Wrench Pipe Jaws, ₱ doz. $2.10
Gem Pocket 70%
Hercules 70%
W. & B. Machinist:
Case lots 50&5%
Less than case lots 50%
W. & B. Railroad Special:
Case lots 50%
Less than case lots 40&10&5%
Solid Handles, P., S. & W. 50&5%
Stillson 65%
Vulcan Chain 50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ₱ gross, $7.50; ₱ doz. $0.80

Wringers—

Tuttle Roller Press Mop Pail Wringer, each, $8.00; ₱ doz. $48.00

Wrought Goods—

Staples, Hooks, &c., list March 17, '92 .90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed .70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters' list net

Zinc—

Sheet .per 100 lbs., $8.15@8.40